An Address
ON
WOUND INFECTIONS
AND ON
SOME NEW METHODS FOR THE STUDY OF THE VARIOUS FACTORS WHICH COME INTO CONSIDERATION IN THEIR TREATMENT.

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(*Continued from p. 741.*)

What are the Factors which Influence the Emigration of White Blood Corpuscles into the Wound?

I PASS now to consider yet another subject-matter—the emigration of leucocytes into the wound. I need not labour the point that this is a factor which may determine the issue of an infection; nor need I point out that it behoves us to acquire a control over the movement of leucocytes, and then to turn this to account, as the case may be, by activating or restraining emigration.

Broad foundations for our work have, as you know, already been laid by the brilliant researches of Metchnikoff. But it was with Metchnikoff always a question of experiments *in vivo*—that is, of experiments carried out under conditions which cannot be sufficiently simplified to give quite unambiguous answers. And we require for the elucidation of our problems and for all detail work connected therewith, absolutely simple crucial experiments, such as can only be made *in vitro*.

The line of thought which I have followed in elaborating a laboratory method for the study of the phenomena of emigration is the following:—The leucocytes in extravascular blood are known to retain their emigrating power. A difficulty will, however, when we are working with extravascular blood, attach to our observations by reason of the fact that we have not at disposal such a containing membrane as the capillary wall. We are, in fact, in dealing with extravascular blood confronted with a situation similar to that which would be encountered in observations *in vivo* if the capillary walls were to give way, and we had to make observations on emigration in a portion of tissue which was flooded out by red corpuscles.

I had hoped at first to be able to circumvent this difficulty by taking advantage of the fact that when clotting occurs the red blood corpuscles become enclosed in a meshwork of fibrin, after the manner of fish in a net. But all my efforts to make the fibrin meshwork take over the office of a containing membrane were defeated. No matter how tenderly the clot was treated the meshes of the net broke, and hæmorrhage from the clot interfered with the observations.

A second difficulty also presented itself. When in the living body white corpuscles emigrate into connective tissue it is possible to register their travel because they move forward through a retaining meshwork. It would not be possible to do so if they merely passed out into fluid, to be afterwards carried hither and thither by every chance convection current. Exactly the same applies to the extravascular blood. The emigrating leucocyte must be provided with some sort of scantling to move forward upon, and come to rest in.

After a time I alighted on a method which satisfies the two aforementioned experimental requirements, and which, as I think, provides all that is required for a quantitative estimation of emigration. Let me first tell you the general lines upon which the method proceeds, and then set out the details of the technique.

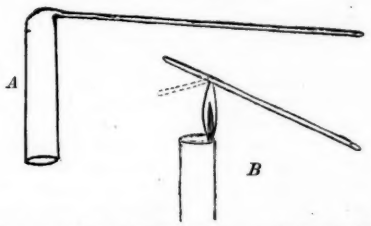
Principle of the Method Employed for making Observations on Emigration.

The principle of the method is as follows:—We fill in a capillary tube with blood from a prick in the finger, immediately place the capillary tube in the centrifuge, and centrifugalise until we have carried down all the corpuscles. We have now in the upper half of the tube a plasma which has been completely freed from all formed elements; and in the lower half of the tube, at the bottom, the red blood corpuscles intermixed with a certain number of polynuclear white blood corpuscles; and above this a layer made up predominantly of white blood corpuscles—these last in the front ranks consisting almost exclusively of small and large mononuclears. The blood now clots. And this gives in the upper half of the tube a clot consisting of fibrin without any formed elements—let us call this the *white clot*—and in the lower half of the tube a clot—let us call this the *red clot*—which holds all the corpuscles in its meshes. When a chemotactic stimulus now comes into application from above the white blood corpuscles will come out from the red clot and will travel upwards through the meshes of the white clot—afterwards maintaining their positions so as to allow of our making measurements and enumerations. We will now pass to the details of the technique.

Details relating to Apparatus and Procedure.

With regard to apparatus, all that is required is a supply of flat capillary tubes. By using flattened capillary tubes we obtain a thin clot, which can more easily be examined under the microscope.

FIG. 5.



Method of making emigration tubes. A, Method of giving the flattened conformation to the capillary stem. B, Method of binding the tube round to form an elbow.

We make these tubes—and they may conveniently be called emigration or chemotactic tubes—either out of a small test-tube, or out of a length of fairly wide-bored glass tubing. We heat in the blowpipe flame until the glass becomes very plastic; then, making a sharp outward turn with the right wrist, bend the tube round through a right angle, giving it the proper flattened conformation; and then draw out into a long flat capillary stem. (Fig. 5, A). We then cut this through at the point where it begins to lose its flattened conformation; and so leave attached to the next segment a sufficient length of tube to take hold of when we go to work upon

it. When a sufficient number of lengths of flattened stem have been provided, we cut these up into segments of about 8 cm. in length; arrange them side by side after the manner of a palisade; and then with our glass writing pencil rule two lines across the face of our tubes. The first of these lines ought to fall somewhere in the middle. It is to serve as a fiducial mark for filling in the blood from the finger. The second line, which may conveniently fall at a point to about half or three-quarters of a centimetre to the end of the tube, is to serve as a fiducial mark in filling in the chemical agent whose effect we are to study.

The tube may now be used just as it is: or we may before using it furnish it with a syphon-curve by bending it round at the level of our second fiducial mark. We do this by taking up each tube separately, holding it horizontally, and then passing it rapidly to and fro through a small by-pass flame. The action of gravity will then, as soon as the glass softens, bend round the tube for us. (Fig. 5, B.)

Method of Using the Emigration Tubes and Bringing the Chemotactic Agent into Application.

The emigration tube is first filled in up to the midway point with blood drawn from a puncture in the finger. In the case where we employ a bent tube this is done by letting the blood flow in through the syphon curve.

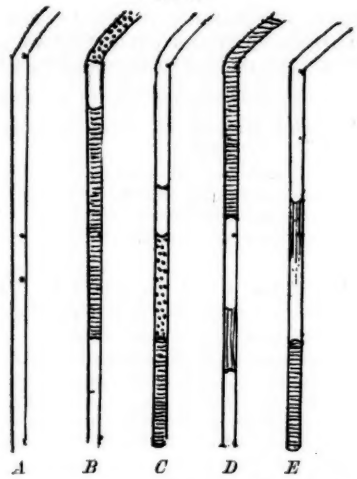
The chemotactic agent can now be brought into application in three different ways.

1. *It may simply be superimposed upon the clotted blood.* This is done by using a *filiform pipette*, made by heating the stem of an ordinary capillary pipette in a small by-pass flame and drawing out, while we with a rubber teat apply internal pressure to prevent the walls of the hair-fine tube collapsing. Considered as a method for bringing a chemotactic agent into immediate application, this method falls short in the respect that the chemical has to diffuse down through the whole white clot before it comes into operation. In view of this, the method does not lend itself to the institution of any comparisons between normal blood and anæmic blood. For the experimental conditions are not comparable when our chemotactic agent has, in the one case, to diffuse through a length corresponding to half the column of blood; and, in the other case, through a length which may amount to nine-tenths of that column.

2. The *second* method of bringing the chemotactic agent into application is that of *superimposing the chemotactic agent upon the unclotted blood.* (Fig. 6, B and C.) Having filled in a curved emigration tube up to mid-point mark with blood; we tilt the tube so as to take in a dividing bubble of air; then fill it up as far as the elbow with the chemotactic agent; and then, after sealing up the distal end of the tube, proceed to centrifuge. This method is applicable, in particular, when we are working with bacterial suspensions; for while the watery suspending fluid remains, by reason of its light specific gravity, on the top, the microbes are, by virtue of their higher specific gravity, carried down into the plasma, to be embedded in the white clot all the way down to the leucocytic layer.

3. The *third* method is the method of *traversing.* (Fig. 6, D and E.) In employing this we may use either a straight or a bent emigration tube. We fill in, first, with our column of blood; then follow on with the dividing bubble of air; and then, making use of the forerunning column of blood to serve as a brake, fill in up to the fiducial point with the chemotactic agent.[1] Finally, we seal up that end of the tube which has served as an inlet and place the tube in the centrifuge.

FIG. 6.



Method of adding chemotactic fluid to blood. A, Curved emigration tube, empty. B, Tube filled in with a column of blood, a dividing air bubble, and then, as far as the elbow, with a bacterial suspension. C, Tube after centrifugalisation. The bottom of the tube is occupied by the "red clot," and the intermediate portion by the "white clot" and implanted bacteria; at the top is the watery menstruum in which the bacteria were suspended. D, Tube filled in for traversing. In the lower portion of the capillary stem is the chemotactic agent; in the upper part the column of blood. E, Tube after centrifugalisation. The bottom of the tube is occupied by the "red clot"; the intermediate portion by the "white clot," containing traces of the chemotactic agent. At the top the watery menstruum containing the bulk of this agent.

Our chemotactic agent will now traverse the column of blood and take up a position at the top, leaving behind it in the plasma traces of whatever chemical it holds in solution. That this is what actually happens, can be shown by employing, in place of a colourless chemotactic agent, a solution of methylene blue, or simple water. This last, when it follows on after a column of blood and dissolves the red blood corpuscles which this leaves in its wake, will come out at the top coloured with hæmoglobin.

The traversing procedure will be applicable in the case where we want to bring into operation chemical agents, and especially applicable where we want to bring such agents into instant application.

When we are working with a series of tubes, as will practically always be the case, it will be well to place each, as soon as it is filled, into iced water, or ordinary cold water. The buckets of the centrifuge will serve as convenient receptacles. After centrifugalisation the emigration tubes are placed in the incubator, according to circumstances, for from three to twelve hours or more. While in the incubator the tubes may conveniently be placed upright—i.e., with the white clot uppermost—in plasticine. They may also be laid on their sides, tilted a little upwards. The inverted position is to be avoided. For when we invert our tubes we

[1] In practice the procedure of traversing is to be carried out exactly as here described. In the illustration, Fig. 6, D, in order to convey the idea of traversing to the eye, the chemotactic agent precedes instead of following the column of blood.

bring down into the white clot a shower of red corpuscles which block emigration, and also obscure the view.

Method of Bringing the Emigration Effect into View and taking Cognisance of the Results.

When all we want, is to get a general idea of what is going on in the tubes, we can obtain this by introducing the unopened tube into an observation cell. A very simple form of observation cell can be made by placing small pellets of plasticine upon each of the four corners of a microscopic slide, covering in with another slide—allowing a little overlap—and then filling into the interspace either water or some more highly refractive fluid, such as glycerine or oil. By observing in such a cell we bring into view not only the leucocytes which have emigrated into the white clot, but also those which have escaped into the interspace which may develop between the clot and the walls of the capillary tube.[2]

For all purposes of quantitative observation we blow out our clots into water, wash carefully so as to remove leucocytes adhering to their exterior, and then mount them on a slide. We then, after cutting off the surplusage of red clot, fix by drying, and stain for a few minutes in Kühne's methylene blue freely diluted. The specimens are examined, first, dry or in water, under a low power objective, and afterwards in oil under an immersion. (See Fig. 7.)

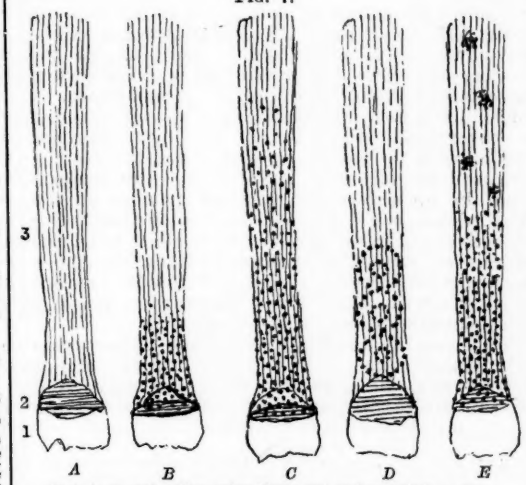
General Considerations relating to the Movements of White Blood Corpuscles.

Before passing to consider the question how it will be possible to arrive at a quantitative expression for the leucocytic movements induced by a chemotactic agent, it will be well to take a general survey of the things that present themselves to view in every emigration tube.

We have to take into account in connexion with white blood corpuscles two kinds of movements. We have, on the one hand, a process of wandering at large; and, on the other hand, a directed movement—i.e., a movement along some particular axis—undertaken under the direction of a chemical stimulus. We may call the first kind of movement an *eleutherotropic* movement. The second is usually known as a *chemotactic*—I prefer to call it a *chemotropic*—movement. It is, of course, the latter, not the former kind of movement which we are here primarily concerned to study. For clearly it is the chemotactically directed movements of the leucocytes towards the bacterial focus, and not their wanderings at large, which come into consideration in any conflict against infection.

None the less, a word may be said about eleutherotropic movements. One finds in every specimen of blood which has been simply centrifugalised and placed in an incubator, always a certain wandering at large of the leucocytes—in particular, the mononuclear white blood corpuscles, which have been tightly packed together by the action of the centrifuge and are ranged at the top of the red clot, leave their ranks and wander out into the adjacent regions of the white clot. The polynuclear leucocytes also are affected by eleutherotropic wandering. They come out from the hinder ranks of the leucocytic layer, and also from deeper down in the red clot, and wander free. In our observations we leave out of account all those leucocytes that have wandered outside the white clot. We regard them as having run to waste.

FIG. 7.



Clots from emigration tubes blown out and mounted: A, no emigration; B, compact emigration; C, dispersed emigration; D, method of enumerating leucocytes which have emigrated; E, bacterial colonies coming up only in portion of clot which has not been reached by the emigrating leucocytes.

A further point which claims attention in connexion with emigration is the *nature of the emigrating leucocytes.*

Ordinary *eleutherotropic emigration* is predominantly mononuclear, this being probably accounted for by the fact that the white blood corpuscles which are ranged up along the line which divides the red from the white clot are almost all mononuclear. In *chemotactic emigration* we have either a differential emigration of polynuclear white corpuscles, or a mixed mononuclear and polynuclear emigration in which either the one or the other of these varieties of leucocytes may predominate. In all such mixed emigrations the polynuclear, presumably because they are faster of foot, overtake the mononuclear, leucocytes and pass on and occupy the more distal portion of the field of emigration.

Method of Arriving at a Quantitative Expression respectively for "Compact" and "Dispersed Emigration."

A quantitative expression for the emigration movement which takes place in a capillary tube can be arrived at in two ways. When we are

[2] Attention may, in connexion with this, be called to facts which have an importance and a useful application in medicine, which happen to have also an importance and a useful application in connexion with the emigration method here under consideration. The facts I have in view are as follows. The blood of a person suffering from chilblains, or any other manifestation of a lowered blood coagulability, will, on centrifugalisation, generally fail to give the kind of white clot we require for our emigration experiments—i.e., one that is firm and non-contractile. This condition of things can be remedied by the exhibition of calcium salts, or, as the case may be, by appropriate additions of these salts made to the blood when filling our capillary tubes. I would in connexion with this emphasise that we have here brought into clear view what is the really material factor in connexion with the effect exerted by calcium salts in the blood.

And I may perhaps be permitted to point out, in connexion with my own work on calcium as an agent for promoting and citric acid as an agent for diminishing coagulability (Brit. Med. Jour., July 29th, 1893, and July, 1894; THE LANCET, Jan. 18th, 1896, and Jan. 30th, 1897), that while what I have said with reference to the clinical effects exerted has been, I believe, universally confirmed and accepted; what I have said with respect to the effect on the coagulability of blood *in vitro* has been traversed. This stands, as I believe, in relation to the fact that the laboratory workers who have repeated my work have employed methods which took into account rapidity, but left out of account firmness, of coagulation. It will now, I hope, by adopting the method of centrifugalising, and watching the effect exerted upon plasma which has been disembarrassed of corpuscles, be possible to arrive at unanimity in these matters. Finally, I may direct attention to the fact that what comes into view in centrifuged, is seen also in uncentrifuged, blood. When we make to this appropriate additions of calcium salts we obtain, as I long ago pointed out, a firmer and non-contractile clot.

dealing with a *compact* emigration (Fig. 7, B)—that is, where the field of emigration is quite closely packed with leucocytes—we have simply to measure the area of that field, or (and this answers the purpose perfectly well) the length of clot occupied by the emigration; and we may conveniently measure it in terms of microscopic fields. In such measurements we take off from the base-line furnished by the distal border of the cone of leucocytes which occupies the base of the white clot. This represents the original leucocytic layer converted, by the contraction of the fibrin, into a cap covering the upper end of the red clot. (Fig. 7, C.)

When, as will happen when a longer time has been allowed for the wandering out and dispersion of the leucocytes, we have before us a *dispersed emigration* it will no longer suffice simply to measure the distance the leucocytes have travelled into the clot. It now becomes necessary to enumerate the emigrating cells. Employing first a low power lens, we bring the upper edge of the cap of leucocytes to the extreme edge of our field of view. Then turning to our oil immersion, we bring this down upon the central portion of the low-power field, and make a count of all the leucocytes which lie within its purview—when necessary, helping ourselves out in our count, by introducing into the diaphragm of our eyepiece a cover-glass divided up by light rulings, made with a glass writing pencil. Having obtained in this way a value for the emigration in an arbitrarily selected portion of the first microscopic field, we go back to our low-power objective and move our specimen along until the objects on the extreme distal margin have been carried right across the field, and now lie just out of view on the other side. The further steps in the procedure are now simple repetition.

What are obtained by this method of enumeration are, of course, only arbitrary figures, and it will be realised that the comparative values arrived at will be strictly accurate only where we are employing clots of similar thickness.

Survey of the Data which the Method has Already Given.

We may now pass on to consider some of the data that the method has already given. White blood corpuscles will move out in any direction towards a chemotactic substance. They will, however, emigrate more freely downwards, than horizontally; and more freely horizontally, than upwards.

Anaerobic conditions are more favourable to emigration than aerobic conditions. Leucocytes will travel out further in the direction of a chemotactic substance when we absorb the oxygen in the tube with caustic alkali and pyrogallic acid and seal, than when we leave the end of the tube open to the air.

Leucocytes emigrate more abundantly in tubes standing at a temperature of 40° C. than in tubes standing at 37°. They do not emigrate at temperatures of 10° to 15°—the temperatures which prevailed on our laboratory bench. After exposure to temperatures of 0° C. for periods of half to one hour they emigrate apparently as freely as before.

Emigration apparently goes on unaffected in the presence of ether. It is abolished or suspended in an atmosphere of chloroform.

Physiological salt solution, brought into application either by traversing or by superimposing it upon the clotted or unclotted blood, induces a very vigorous emigration of polynuclear white blood corpuscles. Weaker salt solutions induce a less vigorous emigration, and water again a less vigorous. Strong salt solutions—for example 5 per cent. salt solutions—suppress emigration.

It will be appreciated in connexion with these and all findings obtained by this method, that they do not tell us the effect of reagents acting in the specified dilutions directly upon leucocytes, but only the effect of these reagents operating from a distance. In other words, our experiments do not furnish information as to what would be the effect of bringing the chemical agents in the specified concentrations directly in relation with the capillary wall.

Bacterial suspensions which have been sterilised by heating evoke, according to the dilution in which they come into application, quite different effects. The general rule applying to bacterial suspensions would seem to be as follows. Concentrated suspensions usually completely suppress emigration. Ten or hundredfold diluted, these same suspensions evoke vigorous emigration. When we employ progressively higher dilutions we arrive in time at a point when the effect of the bacterial suspensions is exactly the same as those of the articular fluid which we are employing as a diluent.

Normal bloods tested with one and the same series of bacterial suspensions exhibit quite different degrees of chemotropic sensibility. Chemotropic sensibility, not alone to bacterial suspensions but also to physiological salt solution, is very strikingly modified in the case of patients suffering from bacterial infections. The same applies to persons inoculated with streptococcic vaccines. In five out of six men, inoculated with such a vaccine and examined both before and afterwards, the emigrating response to streptococcus was subsequently to inoculation very strikingly increased. In the case of one man it was diminished.

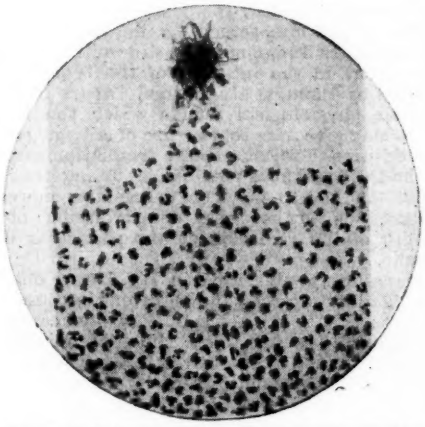
Results somewhat similar to those obtained with dead cultures are obtained with suspensions of living microbes (streptococci and gas phlegmon bacilli), but here the prolonging of the incubation period may strikingly alter the situation.

What generally happens may be summed up as follows. When, by superimposing and centrifuging, a heavy sowing of microbes has been implanted into the unclotted blood, the colonies come up all along the white clot, and emigration into this is completely checked. Where only a moderate implantation of microbes has been made, we have in different parts of the clot different results:—Bacterial colonies develop freely in the distal area of the clot which is not invaded by emigration. In the intermediate region—that is, in the region where the microbes can grow out before the leucocytes arrive—one sees with the low-power objective areas specially crowded with leucocytes—these are in point of fact colonies which are being broken up and dispersed by invading leucocytes (Fig. 8);—and with the oil immersion one sees that every leucocyte in these crowded masses is taking up microbes, and that there is also in all this region of the clot plentiful phagocytosis of scattered microbes. (Fig. 9.) In the base of the white clot—i.e., in the area where emigration has occurred earliest and most vigorously—one finds absolutely no trace of microbial growth.

The appearances which have just been described correspond, of course, to a period of conflict. This conflict is generally at its most interesting phase in

tubes which have been incubated from three to six hours. When we come later—for instance, after 12 or more hours—the conflict is over. We then find either that the white corpuscles are masters of the field, and the microbes have disappeared, or else that the microbes have invaded the whole clot, and that this crumbles away as soon as it is blown out into water. There can be little doubt that the crumbling away of the clot, and the overrunning of the blood with microbes are due to the digestion of the fibrin, and the corruption of the blood fluids by trypsin set free from the disintegrated leucocytes.

FIG. 8.



Extreme limit of emigration, showing phagocytes attacking streptococcus colony.

Experiments such as these just outlined in which living microbes are brought into application on blood provide in point of fact a valuable test method. They tell us the resultant of the *chemotropic sensibility* of the leucocytes, the *opsonic power* of the blood fluids, the *digestive capacity* of those phagocytes which come into action, and of the *antitryptic* and, where such comes into account, the *bactericidal* power of the blood fluids. We are, in fact, furnished with something like a complete evaluation of the antibacterial powers of the blood.[3] There is still one element left out of account. The test method here in question does not tell us anything as to whether or no there are bacterial poisons in solution in the blood fluids of the infected man. But this is a question which can be separately investigated. I have tried to find the answer by traversing normal bloods with the sera derived from patients suffering from septicæmic infections. And I have by this procedure obtained in a series of cases what appeared to be a definitely chemotropic emigration.

All that has been recounted above is, of course, only a very small beginning. But I think we may be confident that the method for the study of emigration which has here been proposed will resolve important problems in connexion with infection generally, and also—and this is what specially concerns us here—some of the problems in connexion with wound infections which are now urgently pressing for a solution.

[3] It will be observed in connexion with tests thus conducted with centrifuged blood that, if we leave out of regard the centrifugalisation, they are in all essentials the same as the *phagocyto-bactericidal* tests with freshly drawn uncentrifuged blood which I have already described (Vaccines and Drugs in Pneumonia, Constable, 1914).

In the matter of general problems of infection it would, I think, be possible, by implanting bacteria into blood in combination with chemical agents which would respectively promote and hinder emigration, to resolve for each particular bacterial infection, the question as to whether it is the leucocytes or the blood fluids which come most into consideration as destructive agencies. That problem once resolved, we should know whether we ought in the infection in question to direct our chief efforts to increasing the efficacy of the blood fluids, or to modifying the chemotropic sensibility of the leucocytes and encouraging emigration.

Again, it looks as if it might be possible by very simple experiments to resolve the problem as to why in gonorrhœa, and also in other surface infections, the purulent discharge is suddenly arrested when the microbes succeed in invading the blood stream, or establishing themselves in an articulation or elsewhere in the interior of the body. It would seem possible—for something of this sort would seem to occur in septicæmias supervening on wound infections—that we may be dealing here with a paralysis of the emigrating powers of the leucocytes. Or, again, it is possible that in these cases emigration may be simply suspended by a redistribution of the chemotactic forces. In other words, the cessation of the external discharge may simply mean that there is now in the blood a bacterial poison; and that this chemotactic element, acting upon the leucocytes as a *vis a tergo*, counterbalances the *vis a fronte* of the chemotactic substances produced by the bacteria on the external surfaces.

FIG. 9.

Phagocytosis of streptococcus towards extreme limit of emigration.

In connexion with the particular problems of wound infections we may hope at no distant date to come into possession of information which will enable us to activate or restrain, according as the one or the other may approve itself the better policy, the emigration of leucocytes into the wound. And we may hope also to determine in connexion with every antiseptic or other solution which is brought into application in a wound, whether it promotes or hinders emigration.

Finally, let me point out—for everything that concerns bacterial vaccines concerns the treatment of wound infections—that experiments on emigration will almost certainly resolve a number of important outstanding questions in

connexion with vaccines. They ought very easily to resolve the question as to what is the best excipient for a vaccine—whether a menstruum which would restrain emigration, or one, like physiological salt solution, which would call forth a vigorous emigrating response at the point of injection. And lastly—and this would be one of the most important applications of observations on emigration—we ought to be able to determine what is in the case of each bacterial vaccine the dose which will induce the earliest possible and the most effective determination of phagocytes to the focus or foci of infection.

(To be continued.)

ON THE PENETRATING POWER OF THE X RAYS FROM THE COOLIDGE TUBE.

BY SIDNEY RUSS, D.Sc.

A Coolidge X ray tube having been acquired by the electro-therapeutical department of the Middlesex Hospital, Mr. C. R. C. Lyster requested me to make some measurements of the radiation emitted from it, preparatory to its being put into clinical use. The results of a first systematic series of tests upon it were communicated to the February meeting of the Roentgen Society. The leading features of the observations were: (1) The recognition that the unscreened radiation from the bulb was heterogeneous, consisting of "soft," "medium," and "hard" rays; and (2) the relatively larger production of "hard" rays than of "soft" rays when the heating current, regulating the cathode stream, was increased.

Since the meeting referred to, the observations on the bulb have been continued with two objects in view—first, to measure the hardness of the rays which would be used clinically (for superficial and for deep-seated conditions); and, secondly, to find how nearly the most penetrating rays given out from the bulb approach the penetrating power of the hard gamma rays from radium. It was assumed that for superficial conditions unscreened "soft" and "medium" rays would be used, and that for deep-seated conditions the rays would be heavily filtered by aluminium; accordingly measurements were made of the character of the rays under these circumstances. This was done by finding how the intensity of the beam of X rays was reduced on interposing sheets of aluminium between the bulb and a small gold-leaf electroscope used to measure this intensity.

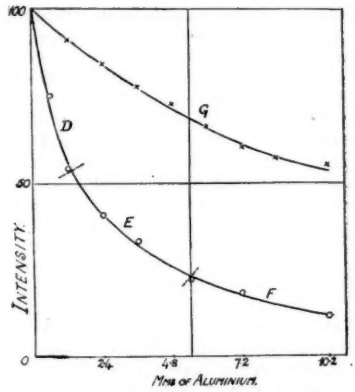
When measuring the unscreened rays the bulb was run under a moderate sparking distance (3 cm. between spheres 5 cm. in diameter, corresponding to about 11 cm. between points). The gradual reduction in the intensity of the radiation as increasing thicknesses of aluminium are interposed is shown in Curve 1, Fig. 1. When this curve is analysed it is found to consist of approximately three portions, which may be considered as Section D, in which the rays are "soft" and therefore easily absorbed; Section E, where they are rather more penetrating; and Section F, where they are considerably "harder." The beam is, as stated, heterogeneous.

The observations upon heavily screened rays were made as follows. For the same heating current as before the spark-gap was increased to nearly the limit of the coil (viz., 10 cm. between the spheres or 30 cm. between points) and the rays were screened by 7 mm. of aluminium. The character of the rays which penetrated this filter was found in the manner described, and the absorption suffered in going through various thicknesses of aluminium is shown in Curve 2 of the same figure. Analysis of this curve shows that the rays are very hard and practically of a homogeneous nature.

The introduction of as much as 7 mm. of aluminium for the purpose of screening effects a considerable reduction in the intensity of the rays, but, granted that at least 3 or 4 mm. are necessary, it remains to determine whether the extra amount of aluminium, by which homogeneity is attained, entails too large a reduction in the quantity of rays available for use; the beam is not quite homogeneous with 4 mm. screening. Actually it is found that this extra 3 mm. entails a diminution of nearly 25 per cent. in the intensity of the beam already screened by 4 mm. of aluminium. Apart from any desirable physiological effects which the hardest X rays may give rise to, the use of a homogeneous beam ensures the most uniform irradiation throughout the tissues that is possible, assuming that such application has to be made externally; moreover, it allows of an accurate determination of the strength of the radiation at any particular depth of tissue.

The results represented in Fig. 1 were obtained by using aluminium as the absorbing substance for the rays; this is a matter of convenience, for the pure material is obtainable in sheets of any required thickness. When it is desired to apply the data to determine the gradual loss of intensity of X rays as they make their way through the tissues certain precautions are necessary. If we consider that the

FIG. 1.



tissues of the human body have on an average about the same density as water, then if we knew the relative transparency of water and aluminium for X rays of any specified quality we could gauge the absorption which the tissues would exercise upon any particular beam of X rays.

When experiments are made to determine this relation between water and aluminium it is found that in the case of soft X rays water (and therefore tissues also) absorbs them much less than its density would suggest, actually about one-fourth part; hence, since aluminium is 2·7 times the density of water, 1 mm. of aluminium absorbs as much $4 \times 2{\cdot}7 = 10{\cdot}8$ mm. of tissue. As one passes to rays of a more penetrating character water becomes relatively to aluminium a better absorber,

and when the homogeneous rays transmitted through 7 mm. aluminium are reached, the factor 1/4 has reached 3/4, so that 1 mm. of aluminium is now equivalent to $4/3 \times 2{\cdot}7 = 3{\cdot}6$ mm. of tissue.

The data are now available for calculating the degree to which the dose of X rays administered varies from point to point in the tissues. As an illustration of this we may consider the case of some condition being treated by X rays screened in the manner indicated. Let it be assumed that the thickness of tissue is 16 cm. and that the surface of the skin is 20 cm. from the anode—the data in the accompanying table show what

Depth below surface.	Intensity of rays. (a)	(b)	Total. (c)
0	100·0	1·8	101·8
2 cm.	57·6	2·8	60·4
4 ,,	33·8	4·5	38·3
6 ,,	20·0	7·2	27·2
8 ,,	12·1	12·1	24·2
10 ,,	7·2	20·0	27·2
12 ,,	4·5	33·8	38 3
14 ,,	2·8	57·6	60·4
16 ,,	1·8	100·0	101·8

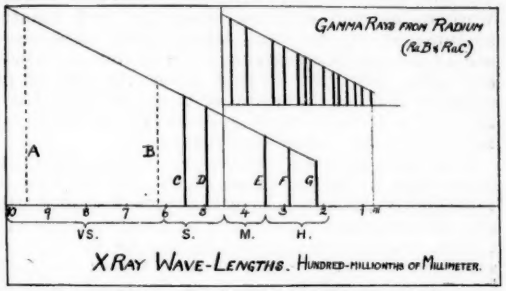
the intensity would be at different depths below the surface, the gradual diminution being due to two causes—increase in distance from the anode and absorption of the rays by the superimposed tissues, both of which are taken into account in the data given. Column (*a*) represents the fall in intensity where the radiation is in one direction, and column (*b*) when the direction is reversed. The total in column (*c*) shows the variation throughout the tissues when the radiation is reversed in the manner indicated.

The question as to how nearly the X rays approach in penetrating power that of the hard gamma rays of radium cannot be answered without specifying the substance which is used to test the penetrating power. For example, if we make a comparison in this respect for lead we find that the X rays emitted from the Coolidge tube, under a spark-gap of 30 cm. (points) and screened by nearly 2 mm. of lead and 7 mm. of aluminium, have about one-thirtieth of the penetrating power of hard gamma rays. If, however, the comparison be made with aluminium under the same conditions, the X rays have a penetrating power of nearly one-fifth of that of the gamma rays, and nearly one-fourth if the comparison be made with water (tissues).

These observations do not preclude the possibility of still more penetrating X rays being produced, but under the conditions specified the above figures represent what holds for the main part of the radiation; if harder X rays are present they do not contribute more than about 1 part in 50 to the effects associated with the heavily screened radiation. By the term "hard gamma rays" is meant the radiation emitted from radium enclosed in a platinum tube 1 mm. thick, the softer secondary rays from the platinum itself being absorbed by 2 mm. of aluminium.

The investigations initiated by Lane in 1912 have been pursued in this country by W. H. Bragg and W. L. Bragg and by Moseley and Darwin, proving conclusively that the X rays are ether vibrations, and many determinations of the wave-length of certain specified rays have now been made. The two latter investigators have shown that the wave-length of an X ray may be inferred if the extent to which the ray is absorbed by some substance, such as aluminium, is known. There is a simple relation between the coefficient of absorption and the wave-length as long as one is not considering regions exhibiting selective absorption. We may make use of this relation to find the average wave-length of the different components constituting the heterogeneous beam whose absorption is represented by the curve (Fig. 1). Dividing this into sections in the way that analysis suggests that it should be done, it will be found that the wave-lengths for the three sections D, E, and F are 4·85, 3·43, and $2{\cdot}84 \times 10^{-9}$ cm. respectively, and these are represented by the vertical lines on the lower diagram of Fig. 2, the length of the line

FIG. 2.



VS. = very soft. S. = soft. M. = medium. H. = hard.

being drawn proportional to the wave-length. Line C is obtained as a result of measurements with a very soft bulb (about 6 cm. spark-gap), and line G with a wave-length of $2{\cdot}14 \times 10^{-9}$ cm. represents the homogeneous very hard X rays obtained under the conditions already specified. On the same diagram are inserted two wave-lengths, A, B, which correspond to part of the characteristic radiation emitted by platinum and rhodium. The data for them are taken from "X Rays and Crystal Structure" (1915), by W. H. Bragg and W. L. Bragg. An inset in Fig. 2 shows the wave-lengths of the gamma rays emitted by radium (RaB and RaC) as determined by Rutherford and Andrade (*vide Philosophical Magazine*, August, 1914).

The representation in this manner—viz., C–G—of the different varieties of X rays must not be taken to mean that the rays emitted consist of homogeneous portions; the radiation is much more akin to white light, but certain regions appear homogeneous when tested by the method of absorption. The subdivisions "very soft," &c., are quite arbitrary, and done for the purposes of the present article. It is hoped that the Dosage Committee of the Roentgen Society will make certain recommendations on this subject in the near future.

A comparison of the two sets of wave-lengths shows that the wave-length of the very hard X rays (deduced from their absorption by aluminium) is about three times that of the shortest gamma ray measured by Rutherford and Andrade. With regard to the possibility of producing X rays with the same wave-length as the hardest gamma rays, it would seem that the advent of the Coolidge tube should bring this realisation nearer than experience with the ordinary focus-tube suggested.

There is a tendency towards the more extensive use of hard screened X rays. This brings with it the consideration that the operator is subject to an increasing amount of stray radiation. The yield of X rays from modern bulbs is a very large one, and the question of protection of all those engaged in the administration of the rays becomes an increasingly difficult one.

NEW THEORIES AND INVESTIGATIONS CONCERNING PELLAGRA.

BY ALBERTO CENCELLI,
SENATOR; PRESIDENT OF THE PELLAGRA COMMISSION OF ROME.

(*Specially Translated for* THE LANCET.)

PELLAGRA is, without doubt, one of the diseases that for more than a century have been the subject of discussion both with Italian and foreign doctors. This complaint, which not only carries off countless victims, and robs agriculture of many able-bodied workers, as well as filling hospitals and lunatic asylums, is not yet vanquished. Men of science are in continual disagreement with one another, and have not yet decided upon the nature of pellagra and its determining cause, far less have they been able to point out the measures to be adopted for its cure and prevention.

Until comparatively recently, maize was generally considered to be the cause of the disease, and it was thought from the investigations first of Sette and Balardi, and subsequently of Lombroso and his school, that it was probably due to (1) the insufficient nutritive value of this cereal; (2) toxic substances found in sound or in spoilt maize; (3) special toxins produced by certain moulds which develop in maize under particular conditions; (4) the increase in virulence of Bacillus coli in the intestine attributable to a maize diet, although the corn is in good condition; (5) the action of definite pathogenic agents introduced into the organism at the time of the ingestion of the maize. Upon these principles and theories are based all the Italian legislative measures for the prevention and cure of pellagra. But the very numerous facts recorded by many scientists in Italy and other countries who have studied the question thoroughly and with much devotion, have proved that maize can no longer be regarded as the sole and specific cause of the disease.

Briefly summarised, the facts are as follows: There are many sufferers from pellagra who have *never* lived on maize; entire districts in Italy (Molise, Campania, Basilicata, Calabria, Liguria) and abroad (Brazil) where good, mediocre, and bad maize are used to an extraordinary degree, in fact almost exclusively, are free from the disease, while in some provinces and communes where pellagra is common, immune zones exist, the latter being clearly marked off from the infected areas, although the climatic, economic, hygienic, and dietetic conditions are identical, and maize is the staple article of food. In a family where the members must more or less have inherited the same tendencies, and are subject to similar hygienic and dietetic conditions and to the effects of equally excessive toil, one or two (rarely more) sicken.

The prophylactic and curative measures hitherto adopted, and which were based upon the maize theory, have in truth yielded but little result. The amount of foreign maize (which is considered the most to be feared) imported into Italy has no effect upon the increase or decrease of pellagra. In spite of the *absolute* abolition of this cereal as an article of diet the disease may continue to show itself with progressive symptoms for many consecutive years.

An English commission, with Dr. L. W. Sambon at the head, which has made a special investigation of pellagra also in Italy, has decided that there is no connexion whatever between maize and pellagra, and has put forward the hypothesis that the disease must be attributed to a parasitic protozoon which is probably transmitted and propagated by a species of mosquito (similium) existing in the drinking water.

Professor Giulio Alessandrini, of the University of Rome, is also a decided opponent of the maize theory. By means of a series of studies and diligent observations prosecuted by himself in almost all the pellagra districts of Italy[1] he has, he believes, established that this malady owes its origin to an exactly localised *quid* found in drinking water, and only in such waters as arise in, or traverse, or are stagnant on, argillaceous soil. Professor Alessandrini has been led to this conclusion from the observation of the following facts: (1) The entire absence of pellagra where clear running water is drunk; (2) the presence of the disease where stagnant water is used or that from ditches or wells in the superficial stratum; (3) the gradual, slow disappearance of the disease where drainage operations are gradually and slowly carried out; (4) the rapid disappearance of the malady where aqueducts are made or where many artesian or other deep wells are sunk at the same time, or where the existing bad wells are put into good condition; (5) the obstinate persistence and even progressive increase of the complaint when nothing has been done as regards the drinking water; (6) the restriction of pellagra in those districts where the water is good, to such persons as have, through emigration, contracted the disease where it is unwholesome; (7) the greater and almost exclusive occurrence of pellagra in country districts, especially in those which are the most thickly populated, and where nothing is done to improve the condition of the water used for drinking purposes. In consequence of these new views, and at the instigation of Parliament, the Ministry of the Interior nominated a commission for the purpose of examining and controlling these new theories, in order to ascertain if it was necessary to change or to modify the present Italian legislative measures regarding pellagra. So far, however, this commission has presented no report.

The above-mentioned investigations of Alessandrini having become known, I thought it well in June, 1912, that the Pellagra Commission of the Province of Rome, of which I have the honour to be President, should request Professor Alessandrini (who is a member of the said commission), together with Professor Giannelli and Professor Filena, to make an inquiry in our province for the purpose of ascertaining the condition of the endemic disease of pellagra in Lazio and to investigate the conditions which directly or indirectly have an influence upon the development of the malady according to both the old and new theories. The report,[2] after having established that pellagra in Lazio is only met with in four districts, and in a limited number of persons (35 women and 11 men), states that also among our own people the disease can, and in fact does, exist where maize is not used; further, that in some districts, it is only met with in the centres of population, while it is absent in the country, and that some of the peasants only fall ill when, from the necessity of finding work, they go to certain districts without, however, making any change in their food or conditions of life.

The conclusions reached are the following: In the province of Rome there seems to be no

[1] La Pellagra in Italia, Osservazione epidemiologiche, Annal d'Igiene sperimentale, Roma, 1910.
[2] Il Policlinico, vol. xx., 1913.

connexion between a maize diet and pellagra; the disease is circumscribed and is always confined to determined localities; there may be some connexion between the drinking water and the malady; there is apparently none between sucking insects and pellagra. The water hypothesis of Alessandrini, although based upon endemic data of indisputable value, needed, however, strict experimental control. Professor Alessandrini himself initiated at the Institute of Hygiene of the University of Rome a few experiments, the results of which being favourable to his theory, encouraged him to continue his researches upon a larger scale.

It appeared to me and to the Pellagra Commission of Rome that these preliminary studies and experiments carried out by Professor Alessandrini (with whom was subsequently associated Professor Alberto Scala, who attended to the chemical side of the question) were of great scientific importance. The new views, if widely controlled and confirmed, might definitely solve the questions of the origin and cure of pellagra. Therefore I did not hesitate to propose to our Commission that the necessary means should be placed at the disposal of the two investigators for the extension of their researches and studies and their experiments on animals. The Commission approved of this suggestion.

Already in May, 1913, Alessandrini and Scala gave a verbal report of the latest results of their labours and the conclusions they considered could be drawn from them. Now they have published a detailed monograph, "Contributo nuovo alla Etiologia e Patogenesi della Pellagra,"[3] in which they give an account of their experiments on man and animals and discuss the definite conclusions they have reached.

The statement already made by Alessandrini and mentioned above was confirmed—viz., that pellagra is contracted in definite zones where the usual drinking water comes from springs arising in argillaceous soil or from the streams and stagnant pools in a clayey district.

The new and important point which has just been established is the cause of the disease. This appears to be a chronic poisoning brought about by the silica in colloidal solution in waters of determined composition; in other words, pellagra seems attributable to mineral colloids. According to the authors, the clay is the first cause of the evil, for the rain-water present, either in the superficial or the deep strata of the ground, reacts upon the clay which is a silicate of alumina, producing a hydrolysis that brings about the formation of silicic acid and hydrate of alumina. Both these compounds, from the condition under which the hydrolysis takes place, can pass into the water in the colloidal form. Since, as is well known, there exists an incompatibility between colloidal silica and colloidal alumina, there only remains in the water the amount of silica in excess of that required for the precipitation of the alumina. The colloidal silica-alumina compound, which must on no account be confused with silicate of alumina, goes to form the deposit. Part of it, however, remains in suspension as a very finely divided colloid, and is the cause of the persistent opalescence often observed in the water drunk by sufferers from pellagra. The poisoning by silica would thus resolve itself into a mineral acidosis upon which would depend all the anatomical, pathological, and metabolic alterations which are met with in pellagra patients. Hence arose the other conclusion regarding pellagra—viz., that it is a disease due to the enforced retention of mineral salts followed by a liberation of acids which is excessive in comparison with the amount regarded as normal in the case of any given organism.

It having been proved that the question is one of mineral acidosis, Scala and Alessandrini believed that the toxic effects could be modified by the injection of an alkaline substance such as trisodium citrate. They also considered that the pellagra-inducing water could be corrected and freed from injurious substances by placing small pieces of lime in the pipes and reservoirs.

In the monograph cited above are described numerous experiments in inducing pellagra in monkeys, dogs, guinea-pigs, and rabbits, either by mixing a small quantity of the water from the pellagra zone with the usual food of these animals, or by means of intraperitoneal and subcutaneous injections of colloidal or gelatinous silica, or by introducing the same substances through their mouths. The results have always agreed, both as regards the symptoms and the pathological, macroscopical and microscopical changes. The clinical complex corresponds exactly, or almost exactly, with that of pellagra in the human subject.

The curative treatment was not only applied to animals in which the disease had been induced, but also to human beings who had been suffering from pellagra for longer or shorter periods of time. As it was a question of an absolutely innocuous substance such as trisodium citrate, the experiments could be carried out without hesitation. The results were in the highest degree satisfactory; persons who had been ill for a long time improved and were cured in a relatively short space of time without any change having been made in their mode of life, surroundings, or diet.[4] The Pellagra Commission of Rome wished that these curative experiments should be largely extended both in its own district and in the other provinces of the kingdom where this disease is most prevalent. Further, it has carried out, at its

[3] Tipografia Nazionale Bertero, Rome, 1914, pp. 176 and 8 coloured plates. THE LANCET, Sept. 12th, 1914, p. 713.

[4] The following are the exact words in which the two eminent scientists have recorded their results:

1. Silica in a colloidal condition and in a gelatinous condition produces chronic poisoning in guinea-pigs, rabbits, dogs, and monkeys when administered by means of subcutaneous or intraperitoneal injections, or when introduced into the mouth. 2. The electrolytes with which the silica comes in contact before entering the circulation have a great effect upon its toxic action, for which reason colloidal compounds or compounds of superficial absorption are made which may be more or less harmful than silica alone, or perfectly innocuous, as in the case of carbonate of calcium. 3. The action of alumina is similar to that of silica, at all events on guinea-pigs and rabbits, and thus increases the effect of the former substance, whether it unites with it in the form of a colloid mixture or whether it is merely in suspension in the water and separate from the silica. 4. The water of the pellagra zones of the Gualdo Tadino district (a subdivision of Grello and Morano) containing argillaceous matter in suspension, when mixed with bran and administered through the mouth to guinea-pigs and rabbits and as a drink to monkeys, produces the same silica poisoning. 5. The feeding on maize-flour and grass of animals subjected to the action of silica in no wise increases the toxic action, except in such cases where the maize introduces poisonous silica, or any other injurious substance. 6. The silica is the cause of the retention of the salts and gives rise, first to an excessive fixing of mineral salts in the tissues and later to the excessive liberation of mineral acids which produce the anatomico-pathological lesions already recorded. 7. The effects of this toxic action are counteracted by intramuscular or subcutaneous injections of solutions of neutral citrate of sodium as an alkalising agent. 8. The complex of toxic symptoms produced by the silica in animals is most similar to, if not identical with, that of human pellagra. 9. Human pellagra is an acidosis, as has already been demonstrated, and is proved by the fact that patients suffering from this disease are cured, or their condition is greatly improved, by the use of neutral citrate of sodium; that is to say, they are cured when the malady is of relatively recent date or when the free mineral acids have not caused irremediable lesions, as must occur in toxic action of long standing. 10. In animals rapid poisoning can occur, which, however, introduces no new features. The same is also the case in acute human pellagra.—Contributo Nuovo, cit., pp. 168 et seq.

own expense, the correction of the water by means of the introduction of pieces of lime in the commune of Onano (Viterbo), which is the part of Lazio where pellagra has always been persistently endemic. The aqueduct has been completely restored, and all possible sources of contamination have been removed, while a number of minute pieces of calcium (previously well washed) have been introduced into the reservoir and along the channel. This will afford a decided proof of the course to be taken in prophylactic measures against pellagra.

Let us hope that the results hitherto obtained may be indisputably confirmed. Pellagra would then be vanquished by very simple and inexpensive means.

DIFFERENTIAL DIAGNOSIS BETWEEN ACUTE ABDOMINAL AND CERTAIN ACUTE INTRATHORACIC DISEASES.

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INTRODUCTION.

THE knowledge that intrathoracic disease may be accompanied by signs of abdominal disease is at least a century old. Thus Laennec in his admirable treatise in 1819 says of pneumonia that though it is unusual for the epigastrium to be painful, yet in those patients who suffer pain in the stomach it is hard to say whether the pain is produced by pressure or from the impediment thereby occasioned to respiration. Andral in 1823 must have seen several such cases, for he states that though in many cases of pleuro-pneumonia "the abdomen is soft and free from pain," there may be (1) hypochondriac pain with nausea and hiccough; (2) pain in the flank and vomiting; (3) sudden pain in the epigastrium; and (4) nausea and vomiting. Louis in 1829 observed pain in the abdomen in a quarter of his cases which died from pneumonia, but he says that pain in the abdomen was only observed in those patients with pneumonia who were suffering from diarrhœa. He observed gastric pain, or vomiting or nausea in 40 out of 82 pneumonic patients. Though Wilson Fox observed that abdominal pain was rarely an initial symptom of pneumonia, the rapid advance of abdominal surgery and the consensus of opinion as to the advantages of early operation have brought this type of case into prominence. Crozer Griffith in 1896 described a case of pneumonia in a child which closely simulated an attack of appendicitis.

In 1902 Maurice Richardson published six cases of pneumonia which were at first diagnosed as cases of appendicitis, and by one of those not uncommon coincidences H. Barnard read a paper on the same subject before the Clinical Society of London on the next day. The latter said that the abdominal signs and symptoms which resulted might be divided into two classes: 1. Parietal, where the abdomen is tender, rigid, associated with painful costal respiration, and spasm of the recti. These signs are generally one-sided, and often in the right or left iliac region. 2. Visceral, where nausea, hiccough, or vomiting is present. The vomiting may be urgent and bilious. Distension may be present. Constipation is usually concomitant. He explains these signs thus: (*a*) That the irritation in continuity of the lower six dorsal nerves may cause abdominal hyperæsthesia and spasm; (*b*) that referred visceral pain explained abdominal pain in those cases of early pneumonia which did not involve the pleura. That visceral impulses passing into the root ganglia of dorsal nerves 7, 8, and 9 exalted their excitability so that impulses from the skin to those ganglia gave rise to painful impressions (Head); and (*c*) visceral signs must be explained by some reversal of the reflex, or by direct involvement of the splanchnic nerves (dorsal 6 to 12) above or below the diaphragm.

On the other hand, C. W. G. Rohrer considers that abdominal pain, especially in children, is often due to inflammation of the diaphragm itself. Pye-Smith and Beddard state that in cases of pneumonia, pain in the side and abdomen is frequently an early sign. "It is due to pleurisy and is therefore absent in deep-seated pneumonias." As stated above, Henry Head believes that the occurrence of abdominal pain in deep-seated pneumonias may be due to referred visceral pain, and I shall quote some cases where as the definite signs of pneumonia were so late in appearing, and there were no signs of pleurisy, the pneumonia must have been deep-seated. Musser and Norris found abdominal pain in only 13 cases out of 1129 cases of pneumonia—that is, in 1·1 per cent. of cases, and vomiting in 192 cases out of 1328 cases of pneumonia—that is, in 14 per cent. of cases. J. W. Chatard observed abdominal pain in 51 cases out of 658 cases of pneumonia—that is, in 7·7 per cent. of cases.

An investigation into the registers for 1910 and 1911 of a metropolitan hospital (the Middlesex) reveals the fact that out of a total of 100 cases of pneumonia 6 cases were admitted into surgical wards as cases of acute abdominal disease. Of these cases, one underwent laparotomy and the others were transferred to medical wards. A case of pleurisy was also admitted into a surgical ward. During this period 4 cases of pericarditis and 1 case of endocarditis were admitted to surgical wards as acute abdominal cases, and of these 5 cases, 4 underwent laparotomy.

DIFFERENTIAL DIAGNOSIS.

The most common acute intrathoracic diseases which may simulate acute abdominal diseases are lobar pneumonia, pleurisy, and pericarditis. I propose to deal with these three diseases in this order, and then briefly to enumerate the various abdominal conditions which they may simulate, mentioning any special points in the differential diagnosis, &c., peculiar to each disease.

A. *Lobar Pneumonia.*

In the differential diagnosis of pneumonia careful consideration must be given to the pulse-respiratory quotient, the temperature, the character of the pulse, the presence or absence of herpes, the colour of the face, the feel of the skin, and the examination of the rectum.

The pulse-respiratory quotient.—I have consulted the charts and notes of all cases of pneumonia and of acute abdominal diseases in the registers of the Middlesex Hospital during the years 1910 and 1911. I have rejected all cases which came in later than 48 hours after the onset, and have taken as the standard the pulse, respirations, and temperature as charted four hours after admission, when I hoped that the influence of transport to the hospital would

have ceased. In many of the acute abdominal cases I have had to content myself with taking the pulse, respirations, and temperature charted immediately prior to operation. I have taken the average of the totals and noted any cases which differed to any extent from the average.

Summary of Averages of Cases of Pneumonia in 1910 and 1911.

Year.	—	No. of cases.	Pulse.	Respiration.	Quotient.	Temperature.
1910	Children with broncho-pneumonia.	37	134·0	48·0	2·8	102·4°F.
1911	,,	17	136·0	51·0	2·6	102·8°
1910	Children with lobar pneumonia.	19	134·0	48·8	2·7	103·C°
1911	,,	12	127·0	48·2	2·65	103·0°
1910	Adults with pneumonia (lobar).	39	112·0	40·2	2·77	102·8°
1911	,,	30	115·0	41·0	2·8	103·0°
	Summary of Averages of Acute Abdominal Cases.					
1910	Children with acute appendicitis.	4	111·6	28·0	3 9	99·8°F.
1911	,,	4	107·0	27·5	3·88	100·3°
1910	Children with appendix abscess.	6	117·0	31·0	3·7	100·6°
1911	,,	8	120·2	27·4	4·3	101·7°
1910	Children with general peritonitis (appendix).	3	114·6	29·0	3·9	101·4°
1911	,,	2	110·0	28·0	3·9	99·8°
1910	Adults with acute appendicitis.	53	100·2	23·3	4·3	100·0°
1911	,,	30	101·0	23·4	4·3	100·5°
1910	Adults with appendix abscess.	30	91·3	23·6	3·86	100·0°
1911	,,	37	102·4	25·0	4·1	100 7°
1910	Adults with general peritonitis (appendix).	15	123·0	27·1	4·5	100·6°
1911	,,	12	112·5	28·0	4·0	101·0°
1910	Adults with general peritonitis.	16	122·0	31·0	3·9	98·5°
1911	,,	13	104·8	28·5	3·7	99·6°

It will be observed from the summaries that the averages were practically the same in each year, and that the average quotient was therefore remarkably constant. On these figures one might formulate this dogma. "In cases where there is doubt as to whether the lungs or the abdominal viscera are responsible for the symptoms, a pulse to respiration quotient of under 3 would decide in favour of the former, and of over 3, of the latter." Unfortunately exceptions are numerous. In the statistics for 1910 and 1911, from which the average was made, there were the following exceptions:—

Children with broncho-pneumonia.—The total number of cases was 54. The number of exceptions was 10, so that exceptions to the above rule equal 18 per cent. The highest pulse to respiration quotient was 5. In 8 cases of these 10 the quotient sank to well under 3 within two days of admission.

Children with lobar pneumonia.—The total number of cases was 31. The exceptions numbered 4, which exceptions to the above rule equal 13 per cent. The highest quotient was 4. In all these cases the quotient became less than 3 within 48 hours.

Adults with pneumonia.—The total number of cases was 69. The exceptions were 18, which exceptions to the above rule equal 26 per cent. One of these exceptions showed as high a quotient as 4. In 14 out of the 18 exceptions the quotient became less than 3 within 48 hours.

If now the quotients of the acute abdominal crises be examined—

Children for 1910 and 1911: The total number of cases was 27, and there was not a case where the quotient was less than 3.

Adults for 1910 and 1911: Total number of cases 206. The number of cases where the quotient was less than 3 was 5, which is equal to an exception of 2·4 per cent. to the statement that the respiratory-pulse quotient in abdominal crises is never less than 3.

It is very interesting to note that every one of these exceptions was a case of general peritonitis. In four cases out of the five the peritonitis was due to perforation of a gastric ulcer, so the probability is that the diaphragmatic peritoneum was involved. The other exception was due to a gangrenous appendix. Two of these cases subsequently developed pneumonia. With the onset of pneumonia the quotient sank from under 3 to 2.

To summarise the results of the investigation of the respiratory-pulse quotient, the quotient in cases of pneumonia is practically always less than 3 within 48 hours, while the quotient in cases of acute abdominal crises is never less than 3 unless the subphrenic peritoneum is infected. Even where this complication has arisen a quotient of less than 3 is exceptional.

Temperature.—On comparing the average temperature of a case of pneumonia with the average temperature of an acute abdominal case a striking difference is seen. In cases of pneumonia of children the average temperature is 102·6°. In acute abdominal cases among children the average temperature is 100·4°. In cases of pneumonia among adults the average temperature is just under 103°. In acute abdominal cases of adults the average temperature is 100·4°. It is very striking that the average temperature of 29 adults admitted with general peritonitis (due in most cases to perforation of stomach or duodenum), was only 99°. Of these general peritonitis cases the highest recorded temperature prior to operation was one of 104° in a case of criminal abortion, while two cases of perforated gastric ulcer admitted two days after perforation had a temperature of 102°. Out of 29 cases of general peritonitis not due to the appendix 10 cases had a subnormal temperature. There was only 1 case of pneumonia with a subnormal temperature, and in that case the temperature had risen from 97·4° to 102° within three hours.

A low respiratory-pulse quotient combined with a high temperature is therefore far more typical of pulmonary disease than of abdominal. Of those cases of pneumonia in children where the pulse-respiratory quotient was over 3, the average temperature was 102·9°, the highest recorded being 105° and the lowest 101°. Of cases of pneumonia in adults with a respiratory-pulse quotient of over 3, the average temperature was 102·8°, the highest being 104·2°, and the lowest 100°. Of the cases of acute abdominal disease where the quotient was less than 3, the average temperature was 100°. The highest was 102° and the lowest 97°.

Pneumonia is not an uncommon complication of acute abdominal diseases, especially with cases of perforations of the stomach or duodenum, and it is interesting to note that with the onset of pneumonia the pulse-respiratory quotient falls and the temperature rises. Conversely, pneumonia may be complicated by suppurative peritonitis. Hector Mackenzie analysed 7868 cases of pneumonia and found that this complication occurred in 22 cases, 17 of which proved fatal. When the diagnosis of pneumonia is established the onset of abdominal symptoms should always arouse suspicion. The early recognition of general peritonitis and the prompt surgical relief may result in the patient's recovery, as it did in one of my cases.

The pulse.—The pulse of pneumonia is increased in rate, but does not usually become very rapid. In an average case, according to Wilson Fox, it is between 90 and 112. Grisolle found that in a quarter of his cases the pulse-rate was less than 100. In my series of cases the average pulse-rate of 31 cases occurring in children with lobar pneumonia was 131. Of these cases, 18 showed a pulse-rate of more than 120, and the highest recorded was 168. Of the 69 cases of lobar pneumonia occurring in adults, the average pulse-rate was 113·5. Eighteen of these cases (or 26·6 per cent.) had a pulse-rate of over 120. The highest pulse-rate recorded was 148, and the lowest was 80.

Comparing these averages with those of acute abdominal diseases the average pulse-rate of 27 children suffering from acute abdominal disease was 115, of which the highest registered was 140 and the lowest 82. Thus both the average pulse-rate and the highest recorded rate in children with acute abdominal disease are lower than in those suffering from pneumonia.

Among the adults the average pulse-rate of 206 cases of acute abdominal disease was 105. Of these cases 98 showed a pulse-rate of over 100—that is, 47 per cent. of cases, and 32 showed a pulse-rate of over 120, which is 16 per cent. of cases. This, I should think, is a low percentage for acute abdominal cases, but as compared with cases of pneumonia in the same series seems to show that the average pulse-rate of pneumonia is higher than that of acute abdominal disease.

Usually the pulse of pneumonia is full and soft for the first few days, but as a rule later becomes smaller and dicrotic. Irregularity is not often found, and James Mackenzie regards irregularity of the pulse in a case of pneumonia before the crisis as a very ominous sign. He has rarely seen a pneumonic adult with a pulse-rate of over 140 recover.

The blood pressure.—As a rule there is but little change in the blood pressure during the first few days, though it may fall 10 to 15 mm. of mercury (Wilson Fox). In severely toxic cases there may be a much greater fall. Where the pressure in millimetres of mercury is less than the pulse-rate the prognosis is grave. The blood pressure is very little affected in most cases of acute appendicitis, but in cases of acute general peritonitis, especially associated with perforated gastric ulcer, and in cases of acute hæmorrhagic pancreatitis the fall in blood pressure is great and rapid.

Cyanosis.—Unless the right side of the heart is failing cyanosis is not often seen with pneumonia (Pye-Smith and Beddard). Cyanosis is seen in severely toxic acute abdominal cases, but in these cases the cyanosis is also due to right-sided heart failure. Acute hæmorrhagic pancreatitis is the one acute abdominal condition frequently characterised by a cyanosis which increases in degree with the increase of the pulse-rate. This cyanosis is not a constant sign, but occurs sufficiently often as to be of diagnostic value. Many authors have drawn attention to this sign, especially Halsted and Moynihan. The cyanosis of acute pancreatitis is sometimes limited to the abdomen, and the face is ashy grey in colour.

Vomiting.—Musser and Norris found vomiting as an early symptom in 14 per cent. of 1328 cases of pneumonia, and as occurring some time during the illness in 27 per cent. of 5047 cases. Schapira found that vomiting was a common initial symptom, especially in children, as it occurred within 12 hours in 57 out of 173 cases of pneumonia which he collected. The vomiting associated with pneumonia is not as a rule persistent, such as is often the case where the peritoneum is involved, or in cases of intestinal obstruction. It may, however, be very persistent, and acute dilatation of the stomach is a well-known complication of pneumonia.

A case of pneumonia which terminated fatally is quoted by Anstie in which vomiting persisted not only during the pyrexial period but for 12 days afterwards, while the temperature remained subnormal. Such a case if associated with constipation may and has given rise to the mistaken diagnosis of intestinal obstruction.

Rigor.—This is a common prodrome of pneumonia. The frequency of occurrence and the intensity are greater in cases of pneumonia than in almost any other disease, with the exceptions of intermittent fever, pyæmia, and puerperal fever. Musser and Norris in an analysis of 9851 cases found it in 5731 cases, or 58 per cent. of cases. Huss observed rigors in 80 per cent. of his cases. Grisolle found it in 145 cases out of 182 cases, and of these it was the initial symptom in 101 cases. Louis found rigors as an initial symptom in 61 out of 79 cases of pneumonia. The rigor usually occurs at the onset, and is rarely repeated. Traube was of the opinion that repeated rigors should cause doubt as to the correctness of the diagnosis. Though occurring in cases of acute abdominal disease, it is not common, except in cases of acute suppuration of the gall-bladder or its associated ducts.

The skin and facies.—With pneumonia the skin is usually harsh and dry, and the cheeks are often flushed. It is not uncommon for one cheek alone to be flushed and that on the same side as the lung affected. In severe abdominal cases, especially where the general peritoneal cavity has been suddenly involved (such as in cases of acute perforation), the skin is often cold and moist. The cheeks are usually pale, and the expression of the patient is pinched and anxious.

Herpes.—This is a common complication of pneumonia. According to Geisler it occurs in 43 per cent. of cases of pneumonia. He analysed 421 of such cases, and found that it occurred in 182 cases. Of these 182 cases, in 1 case it appeared on the first day of the disease, in 18 on the second day, in 66 on the third day, in 41 on the fourth day, in 20 on the fifth and sixth days, and in the remaining 36 after the sixth day. That is to say, that of 421 cases of pneumonia 20 per cent. of cases developed herpes within the first three days of the illness. Riehl analysing 481 cases of pneumonia found that 179 cases developed herpes, 79 per cent. of which appeared between the third and fifth days. Although herpes seldom appears before the third day Aufrecht had a case where vesicles appeared two days before the pneumonia. In my series of acute abdominal diseases no cases of herpes were seen except in such cases as were complicated by pneumonia.

Bowels.—Irregularity of the bowels is not a common feature of pneumonia. McCrae states that in a series of 486 cases of pneumonia the bowels were regular in 57 per cent. of cases, constipation was present in 31 per cent. of cases, and diarrhœa in 12 per cent. of cases. Constipation, when present, may be very marked, and occasionally when such a case is also complicated with abdominal pain and vomiting, the diagnosis of

intestinal obstruction is made. In acute cases of abdominal disease irregularity of the bowels is the rule rather than the exception, especially in cases of acute appendicitis, where constipation is more common than diarrhœa. In an analysis of 123 cases of acute appendicitis I found constipation in 81 cases, the bowels were regular in 30 cases, and diarrhœa was present in 12 cases.

Urine.—In cases of pneumonia the urine is usually diminished in quantity and increased in specific gravity. This increase in specific gravity may reach to 1035 when sugar is entirely absent (Lebert). Slight albuminuria is a more frequent complication of pneumonia than of almost any other acute disease. Thus, in a series of 67 cases analysed by Parkes albuminuria occurred in 30 cases. The excretion of chlorides is usually much diminished. Musser and Norris, analysing the statistics of Ashton, Landis, Musser, McCrae, Fyshe, Hadden, H. Mackenzie, and Ord, find that in some 450 cases the excretion of chlorides is normal in 19 per cent., diminished in 53 per cent., and absent in 28 per cent. of cases. According to Salkowski this hypochloruria is not merely the result of decreased consumption of salted food, but is a true retention of chlorides in the body. This hypochloruria is even found in those cases which are being given sodium chloride by the mouth (Beale).

In cases of acute abdominal diseases there is frequently diminished secretion of urine and increase of specific gravity, associated with the restricted fluid intake, vomiting, and fever, but albuminuria is rare except in very toxic cases. In such abdominal cases as involve the pelvic peritoneum pain on micturition, especially at the completion of the act, is a frequent and valuable sign.

Rectal examination.—Examination per rectum or per vaginam should never be neglected in doubtful cases, as by this method valuable knowledge of the condition of the pelvic peritoneum can be gained. Of all cases of pneumonia where this examination was made only one exhibited tenderness, which was on the same side as the lesion in the lung, but there was no swelling or bogginess to be felt.

B. *Pleurisy.*

Until the development of local signs of pleurisy the difficulty of excluding acute abdominal disease is greater than is the case with pneumonia. When local signs of friction or of collection of fluid can be found then the diagnosis is confirmed, but it is important to determine early whether the pleura or peritoneum is involved. The dry diaphragmatic pleurisy is most likely to give rise to the suspicion of acute abdominal disease. In such cases abdominal respiration is lost, and the rectus on the affected side may be as rigid as a board. Musser and Norris found abdominal pain in 5 out of 82 cases of primary fibrinous pleurisy, in 5 out of 374 cases of serofibrinous pleurisy, and in 2 out of 23 cases of primary purulent pleurisy—that is, 2·1 per cent. of 479 cases of pleurisy.

I may now briefly consider some of the signs and symptoms on lines similar to those already pursued in the discussion of pneumonia.

1. *The pulse-respiratory quotient.*—This is frequently lowered, but the perversion of the quotient is not nearly so striking as in cases of pneumonia. W. H. Walshe states that in a case of pure pleurisy he has never met with a lower quotient than 2·7. In one case of pleurisy which simulated appendicitis on admission the pulse was 136 and the respiration 52, a quotient of 2·6. On the next day the pulse was 112 and respirations 48, a quotient of 2·3.

That the perversion of the quotient is not as great as that of pneumonia is probably due to the fact that the cause of the dyspnœa is pain rather than toxæmia or pressure; indeed, it is remarkable how large a collection of fluid can accumulate *slowly* within the pleural cavity without increasing the respirations to any extent.

2. *The temperature.*—The onset of pleurisy is often marked by pyrexia, which may be considerable; indeed, Wilson Fox considers that *slight* pyrexia is the exception rather than the rule. The pyrexia is, however, usually of less degree than that of pneumonia. The average temperature of acute abdominal conditions has already been discussed, so I will only note that it is nearer that of a simple pleurisy than that of pneumonia.

The pulse.—The rate is usually increased, but is not as a rule very high, seldom being over 100 (Wilson Fox). Only a quarter of the cases collected by Woillez showed a pulse-rate of over 100, and in only 4 out of 182 cases of pleurisy did the pulse-rate range between 120–130. The case referred to is therefore exceptional in presenting a pulse-rate of 136. Referring to the statistics of my series of acute abdominal cases when comparing the average pulse-rate with that of cases of pneumonia, among adults 47 per cent. of cases showed a pulse-rate of over 100, which is twice the percentage that Woillez found in his series of cases of pleurisy.

Vomiting.—This is not uncommon in cases of pleurisy occurring among adults, but according to Barthez and Rilliet it occurs during the invasion in over 50 per cent. of cases among children. As in cases of pneumonia, the vomiting is neither so persistent nor severe as that associated with acute abdominal disease.

Rigor.—The onset of pleurisy is frequently accompanied by a rigor, but the rigor occurs less frequently, and is less severe or protracted than that associated with pneumonia. I have already discussed the occurrence of rigor in acute abdominal disease.

C. *Pericarditis.*

With regard to the differential diagnosis between pericarditis and acute abdominal diseases, great difficulty may be experienced, as is evidenced by the fact that 3 out of 4 cases of pericarditis admitted as cases of appendicitis underwent laparotomy. The difficulty is increased by the fact that in such cases of this nature as I have analysed the abdominal symptoms preceded the development of physical signs of pericarditis by many days. On what signs, therefore, is an early differential diagnosis to be made?

The history.—A previous history of pains in joints, limbs, or of a sore-throat should always arouse suspicion that the alleged case of appendicitis may really be a case of pain referred to the region of the appendix. I have not yet seen a case of uncomplicated acute abdominal disease where the onset was marked by pains in joints or limbs.

The pulse-respiratory quotient.—This is of little assistance as it is not generally low, but is similar to that associated with acute appendicitis and other abdominal conditions. The temperature also is of little help, as a moderate pyrexia is the rule rather than the exception.

Summary of the Average Pulse, Respiration, and Temperature of 30 Cases of Acute Pericarditis in the Early Stage.

Adult males.—Number of cases, 12. Average temperature, 100°. Pulse, 114. Respirations, 27·2. Quotient, 4·2.

Adult females.—Number of cases, 11. Average temperature, 100°. Pulse, 109. Respirations, 28·3. Quotient, 3·8.

Total adult cases.—Number of cases, 23. Average temperature, 100°. Pulse, 110·8. Respirations, 27·8. Quotient, 4.

Children.—Number of cases, 7. Average temperature, 99·7°. Pulse, 114. Respirations, 30. Quotient, 3·8.

Among adults the lowest quotient was 2·8, and the highest temperature 102°. Among children the lowest quotient was 2·6, and the highest temperature 101·2°.

Vomiting.—This condition is sometimes associated with pericarditis and may be very persistent. James Mackenzie, however, states that he has "never seen vomiting arise as a reflex in heart affections, nor, for that matter, from a lung affection."

The condition of the abdomen.—In those cases of pericarditis which closely simulate abdominal crises cessation of abdominal respiration is common, with associated rigidity of the recti and tenderness. In many cases, however, of pericarditis there is reversed abdominal respiration—that is to say, that the abdomen sinks on inspiration. This is due to paralysis of the diaphragm. Wynter states that "though in the majority of thoracic cases affecting the lung and pleura this is one-sided, and the influence on abdominal movement is proportionately less marked, in acute pericarditis the cessation of phrenic action is bilateral, and consequently absence of abdominal movement is as obvious as in abdominal disorders, though rigidity and general tenderness are for the most part lacking." He further states that in two years he has met with 30 cases of pericarditis in which loss of abdominal respiratory movement led to the detection of pericarditis—a number so much in excess of those usually noted that it at once demonstrates the value of such a sign in assisting to recognise a very obscure condition, and suggests that numbers of instances of pericarditis have hitherto been overlooked.

In the analysis of 30 cases of pericarditis the result was: Among adults the local signs were preceded by cessation or diminution of abdominal respiration in 20 out of 23 cases. Abdominal pain and tenderness were noted in 4 of these cases. Among children local signs were preceded by alteration of abdominal respiration in 4 out of 7 cases, and one of these cases experienced abdominal pain and tenderness.

The Acute Abdominal Conditions which may be Simulated.

Acute intrathoracic disease may simulate practically any acute abdominal condition. I will briefly mention such conditions which I have found among my cases and literature. Pneumonia can simulate (1) perforated gastric ulcer; (2) appendicitis; (3) cholecystitis; (4) gastro-enteritis; (5) hæmorrhagic pancreatitis, as in the case quoted by Sir William Osler, on which Halsted performed laparotomy; and (6) intestinal obstruction. Pleurisy is most likely to simulate acute appendicitis when the right pleura is involved. Pericarditis may simulate: (1) Appendicitis; (2) perforated gastric ulcer; (3) acute hæmorrhagic pancreatitis; and (4) duodenal ulcer.

I may now mention some signs which are found associated with these various abdominal conditions, and which if found would confirm the diagnosis.

1. *Perforated gastric ulcer.*—Signs of free gas in the peritoneum. If found, this is a positive sign of perforation of a hollow viscus. Great care must be taken to be certain that the gas is free, as mere diminution of liver dulness may be due to a distended stomach or colon. Absence of this sign does not exclude the diagnosis of perforated gastric ulcer. There are other points in the history, the condition of the patient, &c., which have been already mentioned, but which are inconclusive.

2. *Acute appendicitis.*—A definite swelling in the right iliac fossa, especially if this swelling is confirmed on rectal examination, will render the diagnosis likely to be accurate. A cæcum distended by fæces may prove misleading.

3. *Acute cholecystitis.*—If the presence of a large tender gall-bladder can be determined then there will be little doubt as to the diagnosis, but it is not always easy to demonstrate this when the abdominal wall is rigid and when hyperæsthesia exists.

4. *Hæmorrhagic pancreatitis.*—The acute onset of great epigastric pain associated with extreme collapse, cyanosis of the abdomen and perhaps of the face, if occurring in a stout and middle-aged patient, should arouse suspicion as to the possibility of the pancreas being at fault. The only sign which will render the diagnosis almost certain is a swelling in the region of the pancreas, which may present between the stomach and the transverse colon, below the colon or above the stomach. It is usually impossible to find this, even when present, owing to the exquisite tenderness of the upper part of the abdomen and the rigidity of the muscles.

5. *Acute intestinal obstruction.*—Constipation, if absolute (that is to say, if neither flatus nor fæces are passed after the use of enemata), is certainly never due to intrathoracic disease. The commonest cause of *acute* intestinal obstruction in an adult is strangulation of a hernia. Thus in 1912 the total number of cases of acute intestinal obstruction (including intussusception) admitted into three metropolitan hospitals was 193, of which 122 cases were of strangulated hernia. In cases of suspected obstruction the hernial orifices (normal and abnormal) should be examined, as frequently the patient is unaware of the fact that he is ruptured until the hernia becomes strangulated, and is thus discovered.

One condition which, as mentioned earlier in this thesis, sometimes complicates pneumonia and resembles intestinal obstruction in the abdominal distension is acute dilatation of the stomach. Of 44 cases of acute dilatation of the stomach collected by Campbell Thomson 3 cases occurred as a complication of pneumonia. When this complication ensues constipation is not absolute, and the abdominal distension can be shown to be limited to the stomach. Moreover, immediate relief can be given by lavage of the stomach, although recurrence of the condition is not unlikely to ensue.

Conclusions.

Severe abdominal pain, often accompanied by vomiting, rigidity of the muscles, and even localised tenderness, may exist without any lesion of an abdominal viscus. When possible it is advisable, therefore, to examine the thoracic viscera before submitting a patient to laparotomy. A thorough examination is frequently impossible owing to the condition of the patient, but in all cases the pulse-respiratory quotient can be analysed and considered with the temperature. I consider this quotient to be of the utmost value, and if attention be paid to it I do not think many cases of pneumonia will be treated by abdominal section. With regard to pleurisy and pericarditis, reliance cannot be placed

on either the quotient or the temperature, and as in the past so in the future will mistakes occasionally occur. In all very acute abdominal cases, where the general peritoneal cavity is involved, tenderness is usually elicited on rectal examination and actual swelling is often found; a rectal examination should therefore be made in all suspected acute abdominal conditions. In doubtful cases the history of the onset should be considered, as pericarditis is usually preceded by tonsillitis or pains in one or more joints.

The treatment of cases where doubt exists as to the diagnosis.—When the abdominal signs are so serious that one concludes that if the disease is abdominal the condition is so severe that surgical procedure offers the only hope, then I believe that laparotomy should be performed. Against this view is the fact that if the case is due to pneumonia then harm must be done to the patient by the operation, for apart from shock, the inhalation of ether must have a prejudicial effect on the already congested lungs, and chloroform must still further embarrass a heart enfeebled by toxæmia. In a case presenting such a dilemma the safest procedure would be to perform the operation under local anæsthesia. I have seen this method adopted in the case of a child suffering from lobar pneumonia and general peritonitis. The child stood the operation well, though the disease subsequently proved fatal.

In my series of cases of pneumonia only one underwent laparotomy under a general anæsthetic. The anæsthesia was induced by chloroform and maintained by open ether. The patient died four days after the operation. In Richardson's series of cases one case, a boy aged 6, was treated by laparotomy on the fifth day of the illness. There is no note of the anæsthetic used. The pneumonia was unilateral. This patient recovered. Of Barnard's cases one, a girl aged 17, underwent laparotomy on the second day of the disease. The anæsthetic used was ether. The pneumonia was bilateral, and the patient died on the fifth day of the disease. Therefore, of the 3 pneumonic patients on whom laparotomy was performed, 2 died and 1 recovered. To what extent the operation contributed to a fatal result it is impossible to say, but both were severe cases, and both survived operation for four days, dying on the fifth day of the disease. Musser and Norris state that the fifth, sixth, seventh, and eighth days of disease show the highest mortality.

Acute general peritonitis due to a perforated viscus or a gangrenous appendix, if untreated by the surgeon, almost invariably causes the death of the patient. "Excluding the favourable influence of operative interference, it may be said that no case of diffuse peritonitis due to perforation can be expected to recover spontaneously" (Allchin). Laparotomy does not seem to prejudice the chances of the patient's recovery in cases of pleurisy or pericarditis, as of the five cases I have collected the patients all recovered. Though in each of these cases an error of judgment had occurred, the error lay in the diagnosis rather than in the treatment, for if the diagnosis had been correct surgical interference was the correct treatment, and I consider that under the circumstances the best was done for the patient's good. In all cases the diagnosis is the difficulty; the treatment depends on the diagnosis. In all serious cases where, though there is doubt whether the thorax or the abdomen is at fault, the latter is considered as the probable site of disease, then I think it is to the patient's interest to decide the diagnosis by laparotomy rather than to risk making the diagnosis on the post-mortem table.

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SOME OBSERVATIONS ON 376 CASES OF "FROST-BITE."

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Three hundred and seventy-six soldiers have been admitted to the British Red Cross Hospital, Netley, suffering from so-called "frost-bite." 100 consecutive cases were examined and certain questions were asked of each man. The following particulars have been compiled from their answers. 1. It was freezing at the time of the "frost-bite" in 65 out of 100 cases. 2. Every man was wearing short boots with more than one pair of socks. The majority were wearing puttees. 3. Change of colour in the feet, red-blue, blue, or black, was noticed by the patient in 58 per cent. of the cases. Among these men it had been freezing in 40 cases. 4. In the remaining 42 per cent. the feet were said to be pale. Among these men it had been freezing in 25 cases. 5. In the 58 "coloured" cases the first symptom was numbness or "dead feeling" in 37, pain in 14, and painful swelling in 7. 6. In the 42 "pale" cases the first symptom was numbness in 23, pain in 9, and swelling in 10. 7. In all cases the men had been standing in mud or mud and water of a depth varying from 18 inches to 3½ feet for many hours.

It is difficult in many cases to be certain which is the first symptom, for when a patient arrives at a base hospital some days have already elapsed since

he reported sick, and he has to rely upon his memory. But in both "purple" and "pale" cases numbness and "dead feeling" are given in a large majority of cases as the first symptom.

It is clear that it is not necessary for the temperature to be below freezing-point for the production of "frost-bite." Further, there is an almost equal proportion of "purple" and "pale" cases in which it was not freezing. It would seem that the "pale" and purple cases are produced by the same factors, and may be regarded as different varieties of the same condition; and it may be noted that in a few cases one foot was pale and the other discoloured, though it is usual for both feet to be similarly affected.

Physical Examination.

1. *General.*—The appearance of the feet differs in many respects. As already said, the feet may be "pale" or "purple." Further, in some of the "purple" feet there may be blisters containing dark and usually offensive fluid and ulceration of varying depth. The "pale" feet are of a creamy-white colour, and the skin is dry and inelastic. The foot radiates heat to a distance of two or three inches, the radiation being easily perceptible by the hand. These feet have been said by some observers to present no abnormal appearance, but the characteristic colour and the radiation of heat are definite variations from the normal. Further, the subjective symptoms of pain and tingling are most prominent symptoms in the "pale" feet, with the result that the patient becomes a nervous wreck from want of sleep. In the "purple" feet the discolouration is usually deep purple; it is most evident on the ball of the great toe and at the bases of the other toes. The discoloured area is anæsthetic, but at its margins sensation may be acute. Blisters are most common on the dorsal surface of the toes and foot. Ulceration may follow the blisters or occur independently, and may affect the skin and subcutaneous tissues only, or go down to bone. In the "purple" feet the subjective symptoms are not so severe as in the "pale" feet.

2. *Nervous changes.*—(*a*) Normal sensation was never present in the whole of a "frost-bitten" foot.

(*b*) Anæsthesia was present in many cases. In some the toes only were anæsthetic, a phenomenon most evident in toes that were becoming mummified. In these cases the dorsum of the foot was often very tender. In other cases there was anæsthesia of a sock or stocking area. In several of these cases it was possible to show that there was a larger area of anæsthesia for light touch than for pin-prick. In others it was not possible to get satisfactory answers. In a few cases there was definite anæsthesia of a peripheral type over the region of a particular nerve. The external cutaneous and the peroneal nerves are examples.

(*c*) Hyperæsthesia was present in very many cases either by itself or in a foot which was partly anæsthetic. It was impossible to make out any anatomical distribution of hyperæsthesia, but its severity was remarkable. Such stimuli as cotton-wool and a current of air would be resented by the patient in the most severe cases. Such cases were invariably of the "pale" variety.

(*d*) *Motor changes.*—The individual toes could not be moved or could be moved only with difficulty. The great toe in the majority of cases was held in the position of dorsiflexion.

Treatment.

General.—The chief objects of treatment were to relieve the pain and to secure sleep. Various drugs have been tried—e.g., aspirin, phenacetin, trional, &c. But they were found uncertain in their action, and the most severe cases were given a hypodermic injection of morphia. Many of these patients felt thoroughly ill from the effects of exhaustion and exposure and required good nursing, good food, and plenty of sleep. They seem particularly open to attack by the organisms of influenza and enteric fever.

Local.—1. *Warmth* was useful in a few cases only. If the feet are anæsthetic warmth apparently does good, and again when the feet are nearly well. Bed-socks, cotton-wool covers, or hot bottles will supply sufficient warmth. Radiant heat from electric lamps was tried with good results in a few cases.

2. *Cold* is necessary in the majority of cases. The atmospheric air at this time of the year is cool enough to be soothing to the patient. The usual plan was to leave the feet uncovered and guarded by a bed-cradle. A sheet could be placed over the cradle to cut off draughts.

3. *Position.*—The feet were more comfortable if raised on pillows, and by this means any œdema would be made to disappear.

4. *Massage* was beneficial in the majority of cases. At first it has to be very light, but later more vigorous massage with passive movements was tried. The massage can be dry or with some lubricant.

5. *Applications.*—Various oils were tried with equally good results—e.g., eucalyptus oil, methyl salicylate oil, and a mixture of castor oil, glycerine, and atropine. In the cases of blisters and ulceration dry dressing was employed, some powder such as boric acid or one of the bismuth compounds being used.

Results.

The results have been good, but there is no guide as to the duration of symptoms. It is the custom to send the patient on furlough when he can walk comfortably in boots. Œdema of the feet after walking takes a long time to disappear.

Complications.

Tetanus has occurred in two cases of ulcerated "frost-bite." Both patients have survived. Dry gangrene of toes or part of the foot was fairly common. The dead tissue separated after a line of demarcation had been formed. Sometimes superficial tissues only are affected, and a granulating surface is left. Wet gangrene occurred in one patient, an Indian; amputation was necessary in this case. Thrombosis of the saphenous vein, with a high temperature and rigors, occurred in one case. It is worthy of note that seven patients who had been in hospital in France for a week with "frost-bite" developed enteric fever a few days after their arrival at this hospital. Many have been victims of the "influenza" epidemic.

Causation.

The causation is necessarily a matter for speculation. Certain factors are doubtless of importance. The lowered temperature, not necessarily to freezing-point, is probably of great importance, but in my opinion the immobility of the feet and legs is even more important. The feet are cramped in boots that are made too tight by the extra socks worn; the legs may be kept stiff by badly applied puttees, and the whole limb is held motionless by the inertia of the mud and water of the trenches. The combination of the two factors, cold and immobility, will destroy the vitality of all the tissues of the part—nerves, blood-vessels, lymphatics,

muscles, and skin. The lessened vitality will cause loss of function in these tissues, with venous stasis, impaired nerve conduction, and disordered vaso-motor functions.

Prevention would necessarily be difficult. If a soldier in the trenches wore large waterproof boots in which he could move his toes and leg muscles he might escape "frost-bite," but his activity would be impaired.

In conclusion, I wish to express my opinion that it is incorrect to regard one group of these cases as "neurotic" or "functional." From the cases I have seen I must believe that there is no difference between the forms of so-called "frost-bite" as regards causation. The differences are in the effects on different individuals, and they are merely different manifestations of the same condition. The definite physical characteristics of these "pale" feet which have been diagnosed as "functional" by certain observers are not such as are found in "functional" disorders. It can be admitted that these patients are in a condition of nervous exhaustion, but their previous hardships, to which are added pain and loss of sleep from pain, are sufficient causes for their appearance. Further, the different effects of "frost-bite" may be seen in the same individual and even in the same foot. Whatever else may be discovered about this condition, I personally am satisfied that it is primarily physical and only secondarily psychical.

British Red Cross Hospital, Netley.

A NOTE ON "FROST-BITE."

BY F. McG. LOUGHNANE, F.R.C.S. ENG.,
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"FROST-BITE," so called, as it has affected the health of the troops in France, is not only of extreme military importance, but is also interesting from the point of view of treatment, preventive and curative. Out of 160 patients admitted to hospital one evening about 120 were cases of frost-bite alone, and many of them were stretcher cases. These were very bad cases in which both feet were affected, and so painful and tender that no walking could be attempted, even with the aid of a stick. This is the largest proportion I have seen admitted to hospital in any one day for over two months, but fortunately, although some were so serious as to be incapacitated completely for the time being, they would for the most part recover, unlike many of those previously admitted, for whom amputation was often necessary.

Causation.

There seemed to be no selective racial incidence of the disease. Hill men, such as the Gurkhas, suffered equally with the Sikhs and those from warmer parts of India. Indeed, so far as I could gather from the other hospitals in Boulogne, the Indian troops withstood the rigours of a winter in Northern France no worse than did the European soldiers.

A low degree of temperature is the primary etiological factor in classical frost-bite. This, however, was not the chief determinant in France, where the cold at the time was not very severe, although generally the weather conditions were extremely bad. The feet alone suffered. I failed to see any case amongst the Indians of chilblains or chapped hands. The condition of the feet was brought about by the accumulation of contributory causes, all tending to produce in greater or lesser degree circulatory stasis. These were cold, wet, fatigue, the wearing of tight boots and puttees, and prolonged standing, conditions difficult to preclude in trench warfare in winter time, when soldiers have to stand for many hours over ankle-deep in mud and slush. In regard to boots a vicious circle develops. The wet leather shrinks and presses on the feet, thereby setting up traumatic inflammation and swelling, which swelling in turn increases the pressure from the boots. I think that in most cases ill-fitting and too-tight boots are direct predisposing causes, though these are aggravated and brought into play by constant cold and wet. "Boot-bite" and not frost-bite might be a more correct term. The number of cases showing definite pressure lesions in places usually caused by boots—viz., the prominences of the toes, the inner side of the hallux and heel—was very great. In many of the cases a considerable degree of septic infection was manifest, which is not surprising considering the general lack of care which was often taken in regard to personal hygiene. In fact, it was this seriousness of infection which chiefly determined the gravity of the case.

Symptoms.

Though not easy to ascertain the exact pathological conditions present in frost-bite, few amputations being performed in the early stages, unless serious sepsis or moist gangrene supervenes, yet on the whole the impression one gathers is that of a low-grade inflammation, secondary to vascular changes, affecting not only the skin and superficial tissues, but also the deeper structures, such as muscles, tendons, joints, and bones. Many of the patients complained of pain in the bones and muscles long after all other signs and symptoms had disappeared. I had to amputate in two cases only. In one septic moist gangrene had developed in one foot, and in the other case emphysematous gangrene. When, naked-eye, the parts were examined after amputation, there was found to be an excess of fluid in the cellular tissues, tendon sheaths, and ankle-joint. The subcutaneous fat was yellower than usual, the muscles pale and flabby, and many patches of subcutaneous hæmorrhage were scattered about. The skin in places was obviously necrosed, and often the necrosis extended down to the tendon sheaths. The epidermis was soft and succulent, and could easily be rubbed off.

Clinically many different types of these frost-bitten feet may be recognised, according to the stage at which they are first seen, but in a broad classification may be arranged as follows:—(1) Pain; (2) swelling; and (3) gangrene. This is in accordance with the predominating sign or symptom. The number of cases with pain alone, however, were remarkably few. As a rule pain and swelling were both present. Of the varieties of gangrene—dry, moist, local, and spreading—the commonest obtaining was a dry, local gangrene. Dry gangrene was sometimes associated with swelling, but as often without.

In general appearance the feet showed marked variation. Some were extremely swollen and œdematous, with tense, shiny skins. In others there was little if any swelling, but in patches the skin was blanched and crinkled or stretched. When much swelling was present careful inspection revealed increased vascularity of the skin, which

could be rendered much more evident, however, by using gentle pressure with the finger, thus effacing the superficial circulation, and noting the different effect from that produced thereby in a normal area of skin elsewhere. The redness of inflammation was always difficult to detect in the Indian skin by inspection alone.

The skin was generally of a dark, purple-blue colour, more intense on the dorsum than on the sole, which, except in very pronounced cases, seldom showed any marked change. Peripherally this dark colour shaded insensibly into the normal dark colour of the skin. In the average case a definite colour line of demarcation was seldom seen. Blebs frequently formed on the dorsum of the foot. They were subcuticular and often multilocular. Usually more than one were present. They contained dark, blood-stained fluid; seldom pus even when elsewhere the foot was obviously infected. The skin on the prominences of the toes might be dry and shrivelled and quite hard. On the inner side of the big toe and heel a circumscribed, dry, gangrenous patch was not frequently the only lesion, unaccompanied by general swelling of the foot. The appearance was that of a large dry scab which took some time to slough off, leaving, when it did, a raw granulating surface which healed slowly. In some cases the swelling and œdema were very marked, and involved not only the foot but extended up the leg to the knee. The swelling was most tense over the foot, which was very painful, especially when the plantar fascia was stretched. Pitting on pressure was not characteristic of the œdema; it occurred principally on the leg.

Pain and numbness were the chief symptoms complained of. The former was never very severe, and seldom required alleviation by drugs. Generally local, it was occasionally of a neuritic type, shooting up the leg to the knee, and in one case even as far as the hip. The pain was tingling, pricking, and very persistent, being present for a long time after all signs had disappeared. Occasionally, when the feet were numb, a neuritic pain extended from the feet upwards. No anatomical nerve area was affected, sensory changes being either diffuse over the whole foot or occurring in patches. The calf muscles at times were very painful.

To touch the skin of the feet seldom felt cold, and not infrequently the only sign of lowered vitality was irresilience of the tissues. A diminished elasticity could be demonstrated in almost every case, and was a constant precursor of gangrene. It was always present beyond the edge of a definitely gangrenous patch.

Tenderness was a well-recognised feature. Gentle palpation could generally be carried out with comparative ease, but anything resembling rough handling or firm pressure was sincerely resented. It was a deep tenderness involving muscles and tendons rather than the skin and subcutaneous tissues. If the feet were at all bad the muscles of the calf were in most cases extremely tender. This tenderness had little relation to pain and swelling; it was present when these were absent, and was most marked when all three were present.

Many of the cases ran a temperature from 99° to 100° F. These latter were bad cases of sepsis and emphysematous gangrene, and fortunately were comparatively few. In these cases the odour from the feet was most offensive, and the patients showed marked signs of toxæmia. Very seldom were both feet equally bad, though some of the cases sent to England looked as though they might require amputations at a later date—probably a Syme on one foot and a Lisfranc on the other.

Two Cases of Amputation.

Early amputation was never resorted to unless rendered urgent by the extreme toxic condition of the patient, and fear of spreading infection. The way doubtful cases cleared up under treatment was astonishing; and it was very gratifying to see how cases which on admission seemed so hopeless as to make conservative treatment appear futile, recover to such an extent that the resulting deformity consisted merely in the loss of a toe or toes. In the two following cases, however, prompt radical treatment became necessary early.

CASE 1. *Bilateral frost-bite.*—Patient had been engaged in digging trenches, but did not sleep nor stand about in them. There was no frost at the time. After five days the feet became painful and swollen, and he was treated at a front hospital for a week when, no improvement having taken place, he was sent down to the base. The right foot was a livid, purplish blue, very swollen and œdematous, with blebs on the dorsum. The œdema extended up the leg, pitted on pressure, and gave a slight crackling sensation on palpation. The leg was very painful. Temperature 102° F. The foot was powdered, swathed in a voluminous dressing of cotton-wool, and raised on pillows. The œdema of the leg subsided, no further crackling could be obtained, but the stench from the foot was much more overpowering, and the temperature rose to 103°. A week after admission I performed a Farabœuf's amputation below the knee, and left in a wide drainage-tube. Two days later, as the temperature had not fallen, and a few bubbles of gas appeared in the wound, I removed all the stitches and treated the stump as an open wound with hydrogen peroxide 10 volumes and carbolic acid 1 in 40. Next day the temperature fell to 100°, and by the end of a week the stump was clean and healing. The patient's general condition, very bad before the operation, improved rapidly as a result of the amputation. The left foot had only dry gangrene of the toes and anterior tarsus.

CASE 2. *Bilateral gangrene.*—Left foot was dry with only the toes affected. The right was moist and stinking. Œdema not very marked. Temperature 102° F. A line of demarcation had formed above the ankle. I performed a Farabœuf's amputation below the knee, and the stump healed well by first intention.

General Remarks on Treatment.

The subject of treatment is a wide one, and will be considered in its three phases—preventive, active, and convalescent. As in the case of a good many other complaints, preventive treatment is the most difficult to carry out. There is little doubt that if the men were able to observe the rules of ordinary cleanliness and to change their wet boots and shoes regularly few cases of frost-bite would be recorded. Necessarily recourse must be had to other means. Some of these, however good in theory and at other times, are fanciful and impracticable in an emergency. I discussed this with a traveller whom I met in Boulogne, who had had considerable winter experience for many years in North-West Canada. I was informed that there, amongst seasoned travellers and backwoodsmen, a case of frost-bite hardly ever occurred, no matter how cold and wet the weather; and he suggested that it might well repay the Government to include in the army some North-West Canadians, whose sole duty it would be to attend to the welfare of the soldiers' feet. He recommended that several pairs of moccasins should be worn over one or two pairs of thick woollen stockings. The moccasins, made of skin, are light, watertight, and roomy. They will withstand any amount of hard wear on soft,

wet ground, and would be admirably adapted for use in the mud and slush of the trenches. The outer pair or pairs could be removed and dried when the occasion offered; the innermost pair never become wet. Moccasins, however, could not be used for marching purposes, as they wear out on hard ground, and the manner of walking in moccasins is quite different from that in boots. Moreover, this scheme is impracticable, for neither, when the need is urgent, could the requisite number be obtained in the desired time nor the troops taught how to use them properly. The wholesale adoption of rubber boots, which would be equally beneficial, is also impracticable. A remedy exists, however, in improving the foot-gear commonly employed. The boots worn are too small, ill-shapen, and the leather of the uppers too hard and unyielding. The boots need to be at least two sizes too large to allow for the comfortable wearing of two pairs of socks and the swelling of the feet which prolonged standing is apt to entail. Moreover, boots shrink at least one in size when constantly wet and soaked in water. I hardly ever saw an Indian patient with comfortably fitting, roomy boots. They could seldom be laced up properly and frequently would only fit in the absence of socks. I saw many cases come into hospital with the heel-part of the uppers crushed down and only the anterior part of the foot in the boot. There was no room for the whole foot.

In the active stage treatment will necessarily vary considerably according to the condition present. The milder cases, showing little, if any, organic change, but much incapacitation from pain and tenderness, should, like the more serious ones, be given absolute rest in bed. The feet should be well powdered, and covered with a voluminous dressing of cotton-wool. Too often patients were admitted with a scrappy little dressing inadequately bandaged on. The wool should be four or five layers deep, loosely and thoroughly envelop the whole foot, and extend well up the leg beyond the area of pain and tenderness. The bandage should be very lightly applied, yet firm enough to retain the dressing in its place. Thermogen wool, if available, is the best to use, for it possesses greater heating properties than the ordinary unmedicated wool, but being more expensive it is limited in general use. The dressing need not be changed frequently, but may be left on for four or five days. When pain and tenderness are no longer acute, much benefit may be derived from gentle massage and exercise. Massage, generally with oil, had a decided influence in the relief of pain; and in conjunction with movements—active and passive—in shortening the period of convalescence. At first massage should be confined to light, gentle stroking, becoming brisker as the condition of the feet improves, until ultimately resembling the vigorous rubbing of the popular, homely masseur. Movements of the different muscles and joints were carried out at first in bed, at frequent intervals throughout the day, but as soon as the patient's state allowed he was put on discontinuous walking and tip-toe exercises, resting in bed in between time. Hot-water bottles and fire have to be avoided as a means of improving the circulation, warmth can always be obtained by cotton wool and friction. Apart from the danger in exciting a general gangrene when frost-bitten feet are placed too near the fire, due to a sudden increase of fluid in the tissues consequent on a too rapid thawing, seeing that sensation in many of the cases is numb or absent, a serious burn might easily be inflicted. This was ever to be guarded against at the Indian Hospital, for when left to themselves the patients were apt to get out of bed and squat on the floor, with their feet resting against the stove in the centre of the ward.

In the presence of broken skin or the feet assuming a moist condition, after a preliminary painting of the skin with tincture of iodine 3 per cent. in methylated spirit, the limbs, well covered with cyanide gauze and cotton-wool, were raised on pillows three or four deep. This was preferable to slinging them from a cradle, for not only was more support thereby given, but the patients complained much less of pain. No matter how well the limb was padded, complaint was invariably made of pain at the level of the sling, and the œdema took a much longer time to subside. Often the painting with iodine was repeated, and this process, in addition to alleviating pain, acted as an antiseptic and dehydrant.

In consequence of this treatment a large majority of the cases which were on the borderland between dry and moist gangrene ultimately settled down and became resolved into the former and much more hopeful variety. The dusting powder I employed was a mixture of starch powder, zinc oxide, and boric acid in equal proportions. The mixture is dehydrating, stimulating, and antiseptic. Moist antiseptics and fomentations are not to be recommended, even if the case is septic.

Amputation should be postponed to the last, but never delayed unduly at the risk of the patient's life. I have seen one death follow a too strict adherence to conservative treatment. So long as the patient is suffering but little from the effects of toxic absorption, and pulse-rate and temperature are satisfactory, the iodine and powder treatment ought to be persevered with. When patients are first received into hospital from the front they seem to be in a much worse condition than reality justifies; their vitality is sapped by exposure in the trenches and the hardships of transport by train and ambulance. Some of them had been without food for two or three days, and arrived at their journey's end constitutional wrecks, broken down mentally and physically. It will hence easily be understood how many of the cases, with foul-smelling and swollen feet, discoloured, gangrenous, and septic, convey at first the impression that the condition is an extremely grave one, and that life is in imminent danger of dissolution unless prompt radical treatment is instituted. After a few days of hospital comforts, however, with rest, warmth, and food in plenty, improvement in general health is rapid, and concurrently the local lesions assume a much healthier and less morbid appearance. When amputation was the only choice the leg was removed below the knee. Other cases, showing ingravescence of the gangrenous area, were removed to England.

Treatment in the early days of convalescence is similar to that adopted in the milder cases. The essentials are massage and exercise, with rigorous avoidance of cold, wet, and fatigue. It may be commenced with as soon as the patient will allow it, when pain and swelling have somewhat abated. The most difficult symptom to overcome is pain, which outlasts the swelling for a considerable time and is often of a recurrent character, disappearing altogether for a day or week, then returning with crippling intensity with a change in the weather or the continuance of work, thus in a way

resembling chronic rheumatism. When this occurs confinement to bed again becomes necessary. Drugs confer only temporary relief. Frequently one of a fatigue party from among the convalescents had to be readmitted to hospital for painful, occasionally for swollen feet. This was not a mere plea to escape work, for often as not it was a Gurkha who was thus disabled, a man who was always willing to help and seldom a shirker. The sooner a patient is put on exercises, at first in the ward and then as one of a fatigue party, the better. Too protracted a stay in bed or hospital renders the feet very sensitive. A return to the normal condition is best brought about by encouraging a normal circulation which will follow on the physiological use of the parts concerned.

Salford.

Medical Societies.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Unusual Degeneration of the Cervix.—The "Dublin Method" for the Third Stage of Labour.—The Alexander-Adams Operation.

A MEETING of this section took place on March 12th, Dr. M. J. GIBSON, the President, being in the chair.

Dr. ALFRED SMITH showed a case of an Unusual Degeneration of the Cervix in a patient, aged 60, the mother of 16 children, who consulted him for a profuse slimy discharge. The menopause came on ten years ago. She had enjoyed good health up to August last, when she noticed a slimy discharge from her vagina, without hæmorrhage, pain, or offensive odour. On bimanual examination the vaginal portion seemed to have disappeared, the margins being flush with the vaginal vault, the os being so dilated as to admit the index and middle fingers. There seemed to be no internal os; the cavity of the uterus was greatly dilated; the mucous membrane felt like velvet pile. This slight palpation caused hæmorrhage. On curettage, quantities of brain-like matter reported non-malignant came away, as in cancer. Simple panhysterectomy was performed. The total length of the uterus was 12 cm., fundus 3·5 cm., cervix 8·5 cm., greatest width 6·7 cm. The fundus was normal, but the cervical portion was greatly thickened, due to the transformation of the normal muscle wall into a spongy mass infiltrated with mucoid material, directly continuous with much mucus in the cavity of the cervix. The whole contour of the cervix was affected, more markedly in the anterior and left wall. The true cervical wall was represented by a thin layer of fibro-muscular tissue. No evidence of malignancy. The specimen was in the nature of a channelled mucous polypus, but was remarkable in that it engaged more or less uniformly the whole of the cervical wall.—Dr. E. HASTINGS TWEEDY said it seemed to be an adenomatous condition of the mucous membrane, something like a mucous polypus, spreading over the entire surface.—Dr. R. J. ROWLETTE said he had never seen anything like this exhibit. It possessed remarkable similarities to the glandular structure found in mucous polypi. Why a tumour should sometimes be so confined and at another time so diffuse as this was a problem.

Dr. T. P. C. KIRKPATRICK investigated the claim put forward that the method of conducting the third stage of labour, known for so long as the "Dublin method," had originated in Dublin. He showed by extracts from the "Midwifery" of Fielding Ould, published in Dublin in 1742, that this method was not then taught by him. After Ould, the next work on midwifery by a Dublin writer was that published by Foster in 1781; yet even in this work the "Dublin method" was not clearly described. In 1768, however, John Harvie had published in London a short pamphlet in which he gave a clear and exact description of the method. It seemed probable, then, that Harvie was the first to describe the method, and that subsequently it was adopted as the teaching of the Dublin Lying-in Hospital. Though the Dublin school might not be able to claim the honour of having first described the method, yet that school deserved credit for so early recognising its value and for so consistently teaching it.—Dr. R. D. PUREFOY said he thought the idea of robbing the Rotunda Hospital of the credit of producing a practice which obstetricians all the world over admitted was a markedly safe one might have been left to someone else. That Dr. Kirkpatrick had succeeded in the task he for one was very unwilling to admit. He had not studied Ould's book with sufficient care to know his views on the management of the third stage, but to the Dublin school this method of management of the third stage had long been credited, and in Spiegelberg's "Midwifery" it was alluded to as the Dublin method. The fact that Dr. Harvie described the method did not prove (although he must be given full credit for having used it in his own practice) that it originated in England. He could not help thinking that this practice had been known for a very long time, and in those early days they were not so keen to support their claims as originators because it was considered that they were generally admitted. He hoped that he might obtain evidence that this method of treating the third stage was in general practice in Ireland very shortly after Sir Fielding Ould's book was published, although not specially alluded to, because it was generally recognised. He considered it a pity that they should be deprived of the credit of what he believed to be the practice of the Dublin school for a very long time.—Sir WILLIAM SMYLY expressed their indebtedness to Dr. Kirkpatrick for his careful research. There was no doubt that the description published by Dr. Harvie was what was now generally known as the Dublin method, but credit was more often given to the person who popularised the method than to the person who first described it. The method appeared to be only mentioned by Dr. Harvie, who did not even appear to attach much importance to it, as he placed two other methods before it, whereas in Dublin it was exclusively and systematically taught for generations. When Spiegelberg visited this country he reported that the two things which impressed him most were the Dublin method of the delivery of the placenta and the use of chloroform in Edinburgh. Sir William Smyly did not think Credé's method was the same as the Dublin method; it was much more active and designed to get rid of the placenta as soon as possible. Sir William Smyly thought the very best method was the one referred to as being practised by primitive people—i.e., sitting in the crouched position and rubbing the hypogastrium with the hand, and he suggested that the Dublin method was an adaptation of that. After trying different methods he had come back to the Dublin method as the best.—Dr. TWEEDY said that all Dublin obstetricians had been accustomed to look upon Sir Fielding Ould as the founder of the Dublin method of dealing with the third stage of labour. The method was not described in Ould's book, which, however, was written when the author was only 21 years of age, and before he had acquired any practical experience in obstetrics. It was, therefore, quite possible that the method described by Harvie originated with Ould.—Professor A. J. SMITH said that he had gone through the literature to ascertain the claims of Dublin but he could get nothing but tradition to support it. Sir Arthur Macan, although very much in favour of German methods and literature, was convinced that this method originated in Dublin. Harvie's book did not come under their notice at the time. He agreed with Dr. Purefoy that the case was not proven.—Dr. KIRKPATRICK replied.

Dr. D. G. MADILL reported the After-results in 250 Cases of the Alexander-Adams Operation performed at the Rotunda Hospital during four years, and described the method of doing the operation with a single incision.—Professor SMITH said that in his own experience the type of case suitable for Alexander's operation hardly required an operation at all. Patients who came into St. Vincent's Hospital complaining of backward displacement, menorrhagia, and menstrual pain were first examined under an anæsthetic. If the uterus was found to be mobile a simple method of replacement was adopted by applying the weight of the ordinary Rotunda douche, which usually brought the uterus through the Bozeman's catheter into position. The patient was then put back to bed and examined on the third day; the uterus was

usually found to remain in position. In that type of case the Alexander operation was usually performed, and gave good results in a limited class of cases, but he thought it would not do so if the uterus was enlarged.—Dr. TWEEDY said neither Dr. Madill nor anybody else could say that he had not been mistaken in bimanual examinations, and it was the possibility of these mistakes which robbed Alexander's operation of its value. Personally he favoured the operation of ventrosuspension, but his results from vaginal suspension had also been good. Nine patients on whom this operation had been performed all expressed themselves as having been improved, and four had become pregnant and delivered themselves normally. He thought Dr. Madill had curtailed the operation greatly when he suggested that it should not be done for sterility.—Dr. GIBBON FITZGIBBON thought that any operation for the cure of retroversion of the uterus would produce as good results as the statistics brought forward showed. He agreed with Dr. Tweedy that there were no complications after ventral suspension. He had never found any trouble arising afterwards in pregnancy or parturition. Out of seven cases in which he had done vaginal suspension during the child-bearing period, one afterwards had twins and two others had had single pregnancies, without complications. Many cases of retroverted mobile uterus caused no symptoms unless there was trouble in the tubes, in which case ventral suspension enabled an attempt to be made to correct the cause of the sterility. One came across adhesions of the tubes in cases with a mobile retroverted uterus, but with practically no thickening of the tubes which would be palpable by bimanual examination.—Dr. PUREFOY said Dr. Madill had pointed out to them the points of chief importance in the successful performance of the operation. During Dr. Purefoy's Mastership at the Rotunda this operation had not come into general use there, and he was against it because a woman came into the hospital and said that that was the third miscarriage she had since she had this operation performed by the inventor in Liverpool. He had on several occasions since seen the operation performed in the Rotunda Hospital, and he thought Dr. Madill's statement a powerful one for the operation in the cases he had indicated.—Dr. B. SOLOMONS said that in cases of prolapse of the uterus, in addition to plastic work by the vagina, he considered Alexander's operation very useful. In cases in which the retroversion occurred post partum, and where palliative treatment failed to produce a cure, an Alexander-Adams operation was most suitable. He suggested if either Alexander's operation or ventral suspension were properly performed there would be very little difference in the results. He found that the Alexander-Adams operation was effective in producing a cure without inserting a pessary afterwards.—The PRESIDENT said that in dealing with mobile retrodisplacement three classes of cases generally came under consideration. Firstly, the unmarried woman with uncomplicated retrodisplacement. These patients had no symptoms which could be attributed to displacement, and correction of the displacement was not necessary. Secondly, the married woman bearing children and suffering, as many did, from retrodisplacement complicated with descent, associated with definite discomfort. Examination under anæsthesia and the absence of history of infection enabled adnexal trouble to be excluded, and in these cases vaginal repair with correction of the displacement by the Alexander-Adams operation gave excellent results. Thirdly, the sterile married woman. If a transverse incision were made the tubes might be examined and treated, and the Alexander-Adams operation performed without difficulty. He preferred the Alexander-Adams operation to ventral suspension because relapse was not so liable after parturition, and the position obtained is more normal.—Dr. MADILL, in reply, said that he had seen Sir William Smyly perform a modified Gilliam's operation that morning, and it appeared to have most of the advantages of the Alexander, and, in addition, there was the extra advantage of seeing the inside of the abdomen. He admitted that a weak point was that one could not be absolutely certain, but he was glad to have the support of the President that one could be fairly certain after examination under an anæsthetic. He had nothing to urge against ventral suspension, except to doubt that the uterus remained in position after confinement. If there was no recurrence he was certain it was a better operation than the Alexander-Adams.

Reviews and Notices of Books.

Archbold's Lunacy and Mental Deficiency.
By JAMES WILLIAM GREIG, of Lincoln's Inn, K.C., and WILLIAM H. GATTIE, of Gray's Inn, Barrister-at-Law. Fifth edition. London: Butterworth and Co. and Shaw and Sons. 1915. Pp. 1058. Price 36*s.* net.

THE medical practitioner who comes in contact with the treatment of insanity and the formalities accompanying the custody of the insane only as incidents of his general practice will hardly need to provide himself with so exhaustive and weighty a volume as this. It is, however, otherwise with officers of county and borough asylums or their committees, who, doubtless, will be willing to defray the cost, and with those who, being the proprietors of licensed houses, have to be constantly and unremittingly certain of their ground in dealing with patients with regard to whom the law exercises proper and necessary vigilance. For such as these "Archbold's Lunacy" is a leading and authoritative text-book of the law, and if it has been somewhat augmented in its physical weight and bulk by the inclusion of the Mental Deficiency Act, and contains many pages which will not closely concern him whose professional work is the purely medical care of the insane, it is nevertheless a compendious treatise to which reference may have to be made at any time, when unexpected points arise, as well as on occasions of more usual occurrence.

How far the single-volume form may be preserved without inconvenience when there is ample material for two more readily handled volumes will be a matter for editorial consideration, as the subjects to be dealt with increase periodically and become more or less naturally divisible. The editors in the present case point out that the law of lunacy, so far as it is governed by the principal Act, that of 1890, divides itself into two chief groups of provisions. The first consists of those which are to be administered by the Commissioners and the Board of Control (constituted by the Mental Deficiency Act), by justices of the peace, county and borough councils, guardians of the poor and their officers, officers of county and borough asylums, managing committees and officers of hospitals, visitors, proprietors, and officers of licensed houses, and persons having the charge or being the medical attendants of single patients. The second group is those administered by the Lord Chancellor and the judges for the time being entrusted with the care of the persons and estates of lunatics, and by the masters in lunacy, Chancery visitors, committees, and medical attendants of lunatics so found, and by persons exercising, under the authority of the above higher officials, powers over the property of lunatics not so found, resembling those exercised by the committee of the estate of a lunatic who has been so found. How far this classification might lend itself to a two-volume form in the work in question is a matter worth considering, even though the use of a decidedly large book where a smaller one could be made available is only a matter of temporary inconvenience to the individual. There are, however, branches of the law of lunacy, included in such Acts as the Criminal Lunatics Acts, the Lunatics' Removal (India) Act, 1851, the Colonial Prisoners' Removal Act, 1884, and the Criminal Lunatic Asylums Act, 1860, which fill a good many pages to which recourse would be had only by lawyers

in connexion with one particular phase of insanity and still less often by medical practitioners, from whose point of view we are regarding the subject.

The Mental Deficiency Act and the provisional regulations made under it are, no doubt, the most important addition to their previous work which the present editors of Archbold's Lunacy have had to make, and will be found to constitute a new part, "Part III."; the previous arrangement, by which Part I. dealt with the Lunacy Acts of 1890 and 1891, and with matters of cognate character, and Part II. with Criminal Lunacy, being retained. A brief introductory note preceding the Mental Deficiency Act calls attention to its scope and general outline in clear and succinct terms, and the explanatory notes to the sections of that Act should be of use to all who have to deal with a new piece of legislation, the interpretation of which has yet to become matter for direct judicial decision. In addition to the Mental Deficiency Act there have also been passed since the last edition of this work was issued, the Lunacy Acts, 1908 and 1911, the Asylums Officers' Superannuation Act, 1909, and the Lancashire County (Lunatic Asylums) Act, 1902. As well as these statutes, new rules and alterations of rules have had to be recorded.

Atmospheric Air in Relation to Tuberculosis.

By GUY HINSDALE, A.M., M.D., Hot Springs, Virginia. City of Washington: Published by the Smithsonian Institution. 1914. Pp. 136.

THIS volume is one of nearly a hundred essays entered in competition for a prize of $1500 offered by the Smithsonian Institution for the best treatise "On the Relation of Atmospheric Air to Tuberculosis," which was presented in connexion with the International Congress on Tuberculosis held in Washington in 1908. The essays were submitted to a committee of award, and the prize was divided equally between Dr. Hinsdale and Dr. S. A. Knopf, of New York City. At the request of this institution Dr. Hinsdale has revised his essay so as to indicate some of the advances made in the study of the subject during recent years, with the result that he has published an interesting monograph on aerotherapy in relation to tuberculosis.

An account is given of the influence of the air of forests, of inland seas and lakes, and of sea air on pulmonary tuberculosis. The effects of compressed and rarefied air and of high and low atmospheric pressure are also considered. Dr. Hinsdale takes a broad view of the value of climate in the treatment of tuberculous disease. He does not claim that there is any specific climate, and considers that the long search for such a climate is apparently at an end. He maintains, however, and his contention will be endorsed by most physicians, that climate may be utilised as an adjuvant of great value for carrying out the hygienic and dietetic treatment of all forms of tuberculosis. He also rightly points out that there are some elements of climate that have a more positive influence in hastening cures than others. Undoubtedly the first place among these must be assigned to an abundance of air, as nearly as possible bacteriologically and chemically pure. The value of sunshine is also insisted on, and Dr. Hinsdale believes that the moral effect of a large number of bright, sunny days is very great.

The questions of temperature and of the amount of moisture in the atmosphere are duly discussed, and the conclusion is arrived at that probably the best combination is a low humidity and a moderately cool atmosphere. As far as altitude is concerned, Dr. Hinsdale expresses the opinion that it probably has not, *per se*, any great influence. A comparison of the statistics from sanatoriums situated on the sea-level and at various heights tends to corroborate this view.

There is much that is interesting in this volume; it is well written and illustrated by a large number of plates, mainly reproduced photographs of institutions for the treatment of tuberculosis.

A Text-book of Radiology.

By E. REGINALD MORTON, M.D. London: Henry Kimpton. 1915. Pp. 221. Price 7*s.* 6*d.* net.

THIS is a very valuable addition to the more recent literature dealing with X rays and their use in diagnosis and treatment. It is essentially a practical handbook and, whilst it is obviously written with a full appreciation of the difficulties which beset the path of one who is beginning to work at X rays, the information is so arranged that it will be of the greatest service to that part of the medical profession which relies on the radiologist for aid in the diagnosis of medical and surgical conditions depending upon structural abnormalities of the skeleton and viscera.

Roughly speaking, the book may be regarded as consisting of three parts. The first deals with the elements of electrical principles as applicable to X ray apparatus. This part of the book is the least noteworthy, and perhaps a little more space might have been devoted to information about the various sources of electrical supply—e.g., primary batteries, accumulators, dynamos, &c., and the methods of distribution and modification of electric supply from generating stations; a little more also might with advantage have been added about the means of measuring electricity and the instruments in use for that purpose.

The second part consists of an excellent account of all such apparatus as is essential to an up-to-date installation. This information is very full, and explains lucidly the latest improvements both in instruments and in the methods of using them to the best advantage. It concludes with a useful chapter on regional radiography. Chapters XIII. to XV. are full of information on the latest knowledge concerning the pathological anatomy of the digestive, vascular, and excretory systems, illustrated by many excellent X ray photographs and diagrams which carry conviction with them. This is by far the most original and interesting part of the book, and deserves careful and close study. The last chapter is devoted to X ray therapeutics, and contains valuable instruction on dosage and other practical details.

The book is well printed, the illustrations are excellent, it is of a handy size, and neatly bound.

An Index of Symptoms.

By RALPH WINNINGTON LEFTWICH, M.D. Aberd. Fifth edition. London: Smith, Elder, and Co. 1915. Pp. 516. Price 10*s.* 6*d.* net.

THE fifth edition of this excellent work has been brought up to date by the inclusion of many new tests, of a number of new symptoms, and by amplification of the interlinear notes. But substantially the book remains the same valuable compilation as heretofore, one which the practitioner, be he junior or senior, will find a constant

help in his daily work. The various notes are most sensible, and in many instances are of the obvious kind that makes the reader say, "Why did I never think of that before?" For example, in section 1261, The Intellect, Dr. Leftwich says, "Unaccustomed environment may give a false impression of dulness. As the sheep is clever enough on its ancestral mountains, but is dull on the plains, so the yokel seems dull in a town and the townsman scarcely less so in the country. Deafness also gives a false impression of dulness." This is a very necessary caution to bear in mind.

There is one paragraph concerning which we must join issue with Dr. Leftwich — namely, No. 1396, headed Parergiæ. The paragraph deals with phenomena such as Babinski's fan sign, and Dr. Leftwich rightly says that though this and other similar phenomena are generally classed as reflexes the two differ very essentially. "A term implying collateral action is preferable, and the writer suggests Parergia (*πάρα ἔργον*)." There is a perfectly good Greek noun, *πάρεργον*, meaning a by work, and it is needless and inaccurate to convert this into a Latin feminine. So we suggest the use of parergon for the singular and of parerga for the plural. We are sure that Dr. Leftwich would not speak of protozoæ. This, however, is a small blemish in an otherwise admirable compilation.

A Text-book of Physiological Chemistry.

By OLOF HAMMARSTEN, Emeritus Professor of Medical and Physiological Chemistry in the University of Upsala. With the collaboration of S. G. HEDIN, Professor of Medical and Physiological Chemistry in the University of Upsala. Authorised translation from the author's enlarged and revised eighth German edition, by JOHN A. MANDEL, Sc.D., Professor of Chemistry in the New York University and Bellevue Hospital Medical College. Seventh edition. New York: John Wiley and Sons; London: Chapman and Hall. 1914. Pp. 1026. Price 17*s.* net.

THE advances made in physiological chemistry, or, as some prefer to call it, biological chemistry, are so rapid that even a text-book written a year ago requires in many of its chapters to be recast, and the voluminous title-page of this work indicates alike its growth and the evolution of the science with which it deals. The veteran Professor Hammarsten, now in his seventy-third year, has felt the impossibility of keeping abreast for more than a certain number of years with the developments of physiology, and has adopted as a collaborator his successor Professor Hedin, who is responsible for the revision and reconstruction of the following chapters: I., On General and Physico-Chemistry; III., Carbohydrates; VIII., Digestion; XII., Organs of Generation; and XVI., Respiration and Oxidation. The other chapters were dealt with by Professor Hammarsten himself. Practically the general plan of the work remains unchanged. Some of the facts about oxidation have found a more appropriate setting than heretofore.

The first chapter deals with subjects on the zone common to physics and chemistry, such as osmotic pressure, colloids, catalysis, enzymes and ions, and salt action, just those subjects to which the average medical student pays the minimum attention. Under protein substances we notice that the term "albuminoids" is retained to include keratins, elastins, collagens, gluten, and reticulin, substances which in English text-books are usually grouped as sclero-proteins. Again, while we generally use the term protein, its precursor proteid is here sometimes used. Protamines are treated as true members of the group. Under coagulation of the blood we find the statement that coagulation "is prevented by the injection of an effusion of the mouth of the officinal leech" (p. 251). We did not find specific details about the so-called "biological reaction."

It should be stated that as in previous editions there are no illustrations, save one plate of blood spectra. Elaborate methods are no doubt purposely omitted, though the usual tests for many substances are given. In footnotes to each chapter full and sufficient references to the literature are given. The index of authors is very long, running to 36 pages, while the general index occupies 43 pages.

This work gives a straightforward, very readable, and succinct account of physiological chemistry. It is not overloaded with details and elaborate methods. In relation to certain important methods the principle of the method is stated. We can cordially recommend it as an excellent survey of chemical phenomena and facts in their physiological aspects.

Know Thyself.

By BERNARDINO VARISCO. Translated by GUGLIELMO SALVADORI. London: George Allen and Unwin, Limited. 1915. Pp. 327. Price 10*s.* 6*d.* net.

THE author takes as his text the saying of St. Thomas, "Intelligendo se, intelligit omnia alia." But whereas St. Thomas applied the words to God, Professor Varisco believes them to be applicable to human beings. He endeavours to show that by knowing himself he knows everything else as well. He is inspired to deny even the existence of any sphere of the Unknowable. The doctrine of an Unknowable he regards as a philosophic absurdity, although an inevitable result of scientific methods of inquiry.

The attitude is somewhat presumptuous. St. Thomas did but endeavour to define in an epigram the attributes of God. But the proposition that Professor Varisco's or anyone else's personality is of so all-embracing a description that knowledge of it implies a knowledge of everything else in heaven and earth is one which is neither reasonable nor justified by its results. A perusal of Professor Varisco's work indicates an apparent failure to "know" either himself or any of the main characters of the human mind. On his own principles his attempt to unveil the mysteries of the Unknowable breaks down on its unstable foundations.

Professor Varisco is not the first to imagine that the possibilities of the universe are limited by the narrow confines of his own soul, but he has learnt no lesson from the unbroken failures of his predecessors. He cannot reconcile himself to the conclusion of science, that there are some things which man cannot know. He will not reconcile himself to that conclusion because it is a disagreeable conclusion, which he would gladly see otherwise. So little does he really know himself that he makes his personal sentiments and predilections the test of truth and reality; he cannot disprove the conclusions of science, so he denies that the method of science is the correct method of reaching conclusions. If he were to apply in practical life his doctrines of "theoretic philosophy"—if he proposed to drive a steam engine or to treat a patient simply by knowledge of himself—his career would be brief. He is prudent enough to question the authority of science only in those regions which science has abandoned to the Unknowable. If Professor Varisco's views were to prevail we should be plunged once more in the

darkness which preceded the work of Francis Bacon, for Bacon spread the doctrine that truth was to be found by looking outside at the things around us, instead of inside into our own minds. As things are, works like that of Professor Varisco cannot but accelerate the collapse of much verbiage and casuistry which is dignified by the name of metaphysics.

LIBRARY TABLE.

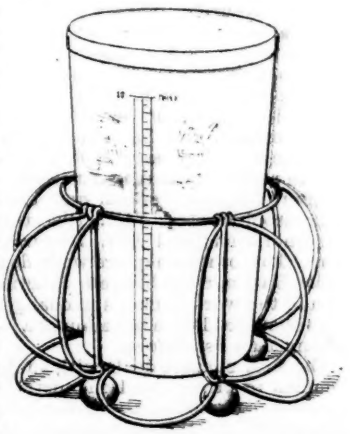
Studies in Questions Relating to Eye-training. By WILLIAM PHILLIPS, M.A., Professor of Education at the University College of South Wales and Monmouthshire, Cardiff. London, Glasgow, and Bombay: Blackie and Son, Limited. 1914. Pp. 138. Price 1*s.* 6*d.* net.—The term "eye-training" has been used loosely in pædagogic circles, and many teachers and others have been led to think that the efficiency of the eye as an optical instrument can be increased by training or special exercises. Hence much ingenuity has been expended on devising exercises—woodwork, sloyd, and so on—and much of the pupil's time has been occupied with them. So far as medical men conversant with the structure and physiology of the eye and its neuro-muscular apparatus are concerned, it was unnecessary to write a book to disprove the obviously faulty thesis. Such "eye-training" is a training of the mental eye and may so far be of great value. The book, however, small as it is, is packed with information of the greatest interest to medical men, especially to ophthalmologists. The author wanders along some fascinating by-paths. He deals, for instance, with the vision of the savage as compared with that of the civilised man, the supposed heightened sensitiveness of the blind and deaf, women's supposed special sensitiveness to colour differences, the peculiarities of animal vision, and the physiology and psychology of visual perception. He has read widely and studied deeply, and he has shown excellent judgment in his reasoning and conclusions, which are clearly and concisely set forth. The scientific accuracy throughout the work is remarkable, seeing that the author is a teacher who has presumably had no medical training. He may perhaps have been saved some errors by Dr. W. H. R. Rivers, to whom he expresses his indebtedness for reading through the proofs. We have noted one or two doubtful statements, but they do not seriously impair the value of the book. The longest chapter deals with school hygiene, with special relation to myopia. It contains some useful references to statistics. Some of the statistics quoted convey the impression that the author regards a visual acuity below 6/6 as necessarily due to myopia. If this be so, it nullifies much of the argument, but we may be mistaken. In any case this should be placed beyond doubt in a future edition. We warmly recommend the book, which has a much wider appeal than its title indicates.

Burdett's Hospitals and Charities, 1915: the Year Book of Philanthropy and Hospital Annual. By Sir HENRY BURDETT, K.C.B., K.C.V.O. London: The Scientific Press, Limited. Pp. 988. Price 10*s.* 6*d.* net.—This volume no longer needs detailed description. As a concise review of the position and requirements of the various charities dealt with, and as a trustworthy guide to British, American, and colonial hospitals and asylums, medical schools and colleges, nursing and convalescent institutions, consumption sanatoriums, religious and benevolent institutions and dispensaries, it deservedly occupies a very high place, and to say that it is indispensable in no way exaggerates its importance. A valuable part of the book is the record of hospital work for the year, and the chapter devoted to the future outlook and extension of voluntary hospitals will repay very careful perusal. Sir Henry Burdett believes that the Government cannot do without the help of the voluntary hospitals, and that it must face the twofold demand upon these institutions for the treatment of Government cases arising out of the National Insurance Act and from the war. With regard to the first matter, the editor points out that the year 1915 may prove memorable in the history and development of voluntary hospitals throughout the country; for in this year the first valuation under the National Insurance Acts will take place, and it is anticipated that the deficiencies which may have occurred will necessitate fresh legislation. In regard to the second matter, it is noted that the war has entailed heavy additional burdens upon the voluntary hospitals through the admission of large numbers of sick and wounded sailors and soldiers, that these burdens will become heavier as the war proceeds, and that no definite or adequate provision has yet been made by the Government to defray the cost of treating the sick and wounded in the voluntary institutions. That the situation is a grave one is shown by the fact that at the end of 1914 the financial position of the voluntary hospitals "represents an extra expenditure of not less than one million sterling, and probably in the whole may approximate two millions, which extra expenditure is due principally to new legislation, extra taxation, and the war."

New Inventions.

A NEW SPUTUM CUP AND HOLDER.

THE chief features of this sputum cup and holder are indicated in the accompanying figure. The cup, which is made of waxed paper, has attached to it a cover of similar material. It does not require sterilisation, as a new cup is used every day, the soiled cup being burnt with its contents. But it is easily knocked over when used alone, and it was to get over this difficulty that the holder was made. I originally designed the holder for use at the Royal Hospital for Diseases of the Chest, City-road, E.C. It is a structure of wire resting on steel balls. Owing to its low centre of gravity and to certain wire loops it cannot be upset.



It has four double handles, so that it can be readily and firmly grasped. It can be sterilised by means of boiling water as often as may prove necessary, but it is not likely to be contaminated with sputum by a patient with cleanly habits.

The waxed paper cup is made by Mono Service Vessels, Limited, Park Royal, London, W., and the sputum-cup holder by Messrs. H. F. Angus and Co., 83, Wigmore-street, W.

H. E. SYMES-THOMPSON, M.D. Cantab., M.R.C.P. Lond., M.R.C.S.
Cavendish-square, W.

THE LANCET.

LONDON: SATURDAY, APRIL 17, 1915.

Drink and Prohibition.

NATIONS, like individuals, are often forced in crises of their fortunes to take prompt and decisive action with regard to problems which in less strenuous times they have regarded as far too difficult and complex to be dealt with save after prolonged study and deliberation, and by partial and tentative measures. That is the situation at the present moment in this country with regard to the drink question. Under the stress of the formidable struggle in which we are now engaged we have been compelled to recognise that alcoholism is impairing our national efficiency in a degree which, even if we make full allowance for the exaggeration of prejudiced statement, constitutes a real and serious danger. It is natural that under such circumstances there should be a demand for heroic measures, and within the last few weeks the suggestion has been put forward in various quarters that the solution of the difficulty is to be found in the absolute prohibition of alcoholic liquors. While the advocates of this radical method are doubtless justified in their belief that, if it could be carried into effect, it would certainly meet the alcoholic danger, it is not quite clear that they have taken due account of the disturbing influence which its adoption would exercise on the economic life of the community, and for this reason we welcome the announcement that a strong committee has been appointed to assist the Government in its decision, and has been granted full powers to deal with the alcohol situation as a whole. Financial disturbance would not, of course, merit consideration if there were no other means than prohibition for enforcing national sobriety. But if the desired result can be attained by less violent measures it would obviously be preferable to avoid introducing any fresh sources of confusion in a time of crisis, and this is the thing which the new committee has to settle upon all the evidence available.

The problem has arisen more particularly in connexion with the efficiency of labour in the manufacture of munitions of war, in the shipbuilding yards, and in the transport industry. It has been asserted by large employers of labour engaged in the armaments trade and in shipbuilding that there has been culpable slackness on the part of a section of the workmen employed on the vitally important tasks of producing ammunition and repairing vessels of war, and that this slackness is largely due to excessive drinking. There appears to be no question as to the accuracy of the facts in relation to some centres of labour, though opinions may differ as to the proportion of workmen who lie under this censure, and as to the extent to which other factors, and notably the factor of overstrain, may have contributed to the production of inefficiency. And, however regrettable it may be that such a cause should be operative in a time of national emergency, there is nothing novel or surprising in the fact that alcoholism is unduly prevalent amongst the workmen engaged in the industries to which we have referred. As was pointed out some years ago, the practice and tradition of industrial drinking—that is to say, of drinking as an aid to muscular work—are nowhere more firmly established than in the class of casual dock labourers and amongst iron-workers, and in the latter group it is precisely in the semi-casual class of marine repairing engineers that this type of alcoholism is especially rife. The war, by withdrawing to active service a large number of the efficient and robust men engaged in the metal trades and in shipbuilding, gave to the less fit and less energetic men, and to the men employed by small masters with laxer standards of work and sobriety, the chance of being taken on in the larger and better class factories and yards; and naturally the greatly increased demand for war material operated in the same direction. As a result these men, accustomed to the use of alcohol as an industrial stimulant, and urged on to increased effort in the general speeding-up of work, carried into their new jobs the drinking habits which, not yet extinct even in the works of large employers, flourish freely in the lower ranks of these trades; and so the tradition of industrial alcoholism would naturally be spread and strengthened. It is hardly necessary to add that under such conditions the liberal wages paid in this period of booming trade furnished ample opportunity for convivial excess with further aggravation of slackness and inefficiency. It is a matter for regret that until the present crisis temperance reformers have for the most part given singularly little attention to this aspect of the drink question, and that their efforts have never been directed with much energy to combating this, by far the gravest and most intractable form of alcoholism. In this, as in so many other matters, we are suffering in time of war for our lack of organisation in time of peace. If the provision of adequate canteen arrangements had been more stringently enforced, if employers had been educated by appeals to their self-interest to prevent the introduction of liquor on their works, and if some of the energy applied to securing the early closing of public-houses had been directed to preventing their early opening, much might have been done to break the force of the tradition of industrial drinking to which the present discreditable state of affairs is so largely due. The whole subject has been dealt with by Dr. W. C. SULLIVAN in a work entitled "Alcoholism, a Chapter in Social Pathology," which at the present moment is a very illuminating treatise.

Modest measures, such as those just enumerated, may yet serve a useful purpose, but it is obvious that to combat the dangers of the existing crisis

it is necessary to have recourse to more drastic remedies. And of these remedies the most effectual would undoubtedly be the prohibition of distilled spirits. It is chiefly in the form of spirits, especially as gin or whisky, that alcohol is taken in industrial drinking; at all events, in the metal industries and in the shipbuilding yards. Amongst other advantages that spirits possess for this purpose, their portability and the comparative ease with which they can be smuggled into workshops, give them a special attractiveness to the industrial drinker. And we may note here that limitations of the hours of public-houses tend in the same way to enhance the value of spirits and lead to their increased consumption in lieu of beer. At Cardiff, for instance, it has been observed that one effect of the early closing regulations which came into force last September has been to cause an appreciable increase in the sale of bottled spirits, and the same thing has probably occurred elsewhere. On this ground, then, as well as on account of their more deleterious effect on health, spirits are in a special category, and their suppression would be free from the risks and inconvenience that might result from complete prohibition. Moreover, the prohibition of spirits would be practicable, while all experience goes to show that complete prohibition cannot be made a reality without the support of a united public opinion; and when it is not a reality it means, as a rule, an increased use of the stronger and more injurious alcoholic liquors, and the development of an illegal traffic which corrupts public morality. On the whole, therefore, it seems reasonable to conclude that the exigencies of the present situation do not justify any such measure as absolute prohibition, but that the prohibition of spirits would probably lead to a considerable diminution of the alcoholism which is impairing the industrial efficiency of the armament factories and the ship-yards. And we may add, as a further argument in support of this policy, that the more limited measure of abolishing the sale of spirits is not likely to produce any such reaction to intemperance at the end of the war as would in all probability follow on the cessation of a temporary system of complete prohibition. This danger would be even less likely to arise if the present exceptional opportunity were seized to reorganise the public-house on rational lines as a place of decent resort.

"Frost-Bite" or Trench-foot.

ONE of the most striking of the illnesses from which our troops have suffered at the front has been that condition to which the name of "frost-bite" has been applied for want of a better appellation. It is to be hoped that the knowledge of this serious condition which our medical officers in the army now possess will lead to the consideration and formulation of preventive measures ready for adoption in future need. With the advent of spring this new scourge of armies is disappearing, as we are informed by Sir JOHN FRENCH'S last despatch, but it is most important that we should learn from the severe lessons that we have received in the matter, if only because no one can say that in the ensuing winter we shall not want to draw upon our information. The number of the papers and letters on the subject which have appeared in the columns of THE LANCET has testified to the interest which has been excited amongst our surgeons by the appearance of these lesions, and by the questions as to their etiology, their prevention, and their treatment. The views held by many observers are held in common, and give us trustworthy directions as to cause and treatment, at any rate; anything like systematic prevention could not be attempted this winter, for the trouble was not foreseen until it arrived.

The term "frost-bite" is not accurate, for all observers are agreed that this form of injury to the feet may occur when the temperature is above the freezing-point—in fact, according to one observer, frost was present in not more than 10 per cent. of the cases. The most severe lesions, however, seem to have been produced in those cases which were exposed to frost after getting thoroughly wet. A further point indicating that frost in itself has but little to do with causing this condition is to be found in the fact that the hands, the nose, and the ears, which are so very liable to suffer from true frost-bite, have escaped almost entirely in these patients. When we search for some predisposing cause we cannot find it in the general nutrition of the men, for in nearly every case the nutrition of the men has been good; in numerous instances the patients had been for some weeks receiving better food than was their wont. But undoubtedly in many cases a want of sleep, and a condition of nerve strain, may have assisted the appearance of the affection of the feet. What name should be applied to the condition is a difficult question, especially as those who are most acquainted with the subject are by no means unanimous as to the exact method of its production. Various names have been suggested, and amongst them may be mentioned chilled foot, trench-foot, trench frost-bite, boot-bite, and water-bite. It is better to employ a non-connotative name, and on the whole the term trench-foot appears to us to be the most suitable for a condition which has practically only been met with in those who have had to remain for long periods in the trenches. While there is no complete unanimity among those who have studied the matter as to the mode of production of the trench-foot, it is generally agreed that some interference with the circulation in all the tissues of the foot has been the most important factor. This interference comes mainly from the boots and from the puttees. If the boots are tight, then they will exert undue pressure on the feet, and this harmful pressure will be still greater if the attempt is made to obtain greater warmth by the use of two pairs of socks. The pressure

will also be greater when the boots have become wet and hard. The pressure exerted by puttees is also of importance. If the soldier, in order to prevent the puttees from slipping down, applies them too tightly, they will interfere with the circulation; but even if, in the first place, they have been applied with no undue tightness, the action of the prolonged immersion in water will tend to make them tighter than they were, and so the pressure becomes greater. In addition to this interference with the whole circulation of the foot, the capillary circulation of the surface will be slowed by the cold, even though the temperature is well above the freezing-point, and the capillaries are contracted also by the cold. Then follows some exudation from the blood-vessels, and this exudation presses on the vessels from which it has come, and thus the circulation is still more obstructed. Another factor must not be disregarded: the men remain for many hours in the trench with hardly any bodily movement, the muscles are inactive, and the assistance which the circulation ordinarily receives from the movements of the muscles is not afforded, so that in this way also the circulation is still more hampered.

Such being in all probability the mode of production of trench-foot, as the very numerous reports which have reached us concur in believing, we must consider its treatment both remedial and prophylactic. To deal with the condition in its milder forms but little active treatment is needed. Two papers in THE LANCET this week describe the routine followed at different centres, and it will be seen that in the main it is similar. The patient should stay in bed, with the feet raised on a pillow, so as to favour the return of blood. In most cases the patients suffer less from pain if the feet are not bandaged at all; for keeping the feet warm usually increases the suffering, though there are exceptions to this rule. When there is no breach of surface, or the injury is slight, nothing more is required, but when bullæ are present some mild antiseptic application is required. Those that have been found of value are very numerous, so the surgeon has a wide choice, and the exact substance employed seems to matter little. When gangrene has occurred it seems to be clear that any early removal of the necrosed portions is undesirable, and even when the line of demarcation has formed the skin is generally much more extensively destroyed than are the deeper tissues, so that the total amount which has to be removed is generally very much less than might be thought at first, and the cases are few indeed in which a formal amputation is required. In cases where there is much pain it is essential that good sleep should be obtained, as on this the patient's general condition often mainly depends. Important, however, though the treatment of trench-foot is, still more important is its prevention, and this, of course, is what we now have to think of especially. We have to consider the possibility of another winter campaign, and we must be prepared in time for a condition which is new in military surgery, and is produced by new general tactics and circumstances. At first sight it appears that warmer clothing to the foot is the one thing needful, but this in itself may prove a danger. The wearing of two pairs of socks in boots that are only large enough for one will have a great tendency to interfere with the circulation of the blood, and this may lead to the trench-foot which it was intended to avoid. There must be general orders in respect of puttees; it could be pointed out that they may easily be wound too tightly round the legs, when they will interfere with the circulation. The boots must be loose; it is always advisable for the soldier to have the boots a size larger than he usually wears. The ideal wear for the foot in the trenches, loose-fitting wading boots, must be in many places impossible, as the soldier has not only to live in the trenches but also to march and charge. The expense has been mentioned as an objection to the supply of wading boots; but we do not think that this can be really put forward as an objection, if their use would prevent the invaliding of the thousands of men who have been suffering from trench-foot. All these points, most of them quite obvious, are now in the possession of the authorities, and we may be sure that organised steps will be taken in time to prevent a recurrence among our troops of a painful and distressing malady which has deprived us of the services of many otherwise able fighting men.

Medical Officers of Health and the Army.

WE publish in another column an abstract of a document issued this week by the Local Government Board, entitled "Circulars and Papers relating to the Coöperation of Civil and Military Authorities in Sanitary Matters." This document deserves the close attention both of members of the civil public health service and of army medical officers, and should remove doubt, if any exists, as to the active part which the War Office desires civil medical officers of health to take in looking after the sanitary welfare of troops in camps or billets in this country. A previous circular, on which we commented in our issue of Oct. 31st, 1914, set out the position in this matter, which was then agreed to by both Government departments. Civil medical officers of health were to be consulted by the military authorities on the establishment of camps, or the arrangement of billets; their visits were to be encouraged, and in matters of importance they were authorised to make direct representations to the Deputy Director of Medical Services of the command concerned as well as to the Local Government Board. Arrangements were to be made wherever practicable through the county and sanitary authorities, and their public health officials, for the utilisation of isolation hospitals by

the troops, for interchange of information as to infectious diseases, for disinfecting blankets and clothing, and generally for the undertaking of "sanitary services."

The scheme, which has been organised by the Local Government Board and directed by the medical inspectors of that department, has evidently developed considerably in importance and utility. The document now issued contains departmental letters of various dates settling the procedure in such questions as the payment from army funds of the charges of local authorities, the remuneration of sanitary officers, the arrangements for additions to civil isolation hospitals for the reception of military cases, and the inspection of food supplies. A series of notes on the "Inspection of Billets, Camps, &c., by Medical Officers of Health" sets out in a practical form some of the principal points to be attended to on these inspections, the importance of which has been illustrated by recent experience. Among these we note directions as to the method of communicating with the military authorities, and the condemnation of billets, or the reduction of the number of men in billets, on account of insufficient floor space, defective ventilation, insufficient lavatory, water-closet, or latrine accommodation, and other sanitary defects. It is requested that special attention should be given to cook-houses and places of food storage and messing-rooms, and it is stated to be essential that the medical officer of health should draw the attention of the officer commanding the troops to any uncleanliness of floors, tables, or feeding utensils. Small posts like guards at waterworks and bridges should not be overlooked, while camps are to be specially inspected, particularly in regard to overcrowding and to the method and efficiency of disposal of excreta, urine, sullage water, and food refuse. Directions of this kind are opportune at a time when large new movements of troops in the country are expected, and when new bodies of men, with a medical staff necessarily unfamiliar with the units under its charge and the sanitary requirements of the places were they are quartered, will be replacing forces going overseas.

In an article on the relations between the civil and military authorities which have existed during the war, published elsewhere in this issue of THE LANCET (p. 818), there will be found a letter addressed to the Local Government Board of the highest interest. In this letter, which also appears in the latest circular of the Board, the Army Council has expressed the opinion that the assistance which local public health authorities, and particularly their expert officers, have already rendered in the unexampled circumstances of the last eight months has been invaluable in safeguarding the health of the forces and in preventing the spread of infectious disease, and requests that the thanks of the War Office may be conveyed to the councils of the counties, boroughs, and sanitary districts concerned for the work thus performed. We are confident that these commendations have been well earned, and they will be read with satisfaction by medical officers of health who, perhaps against their personal inclination, have remained at their civil posts in the belief that by turning their special knowledge to its best use in the localities in which they act they are giving good service to the army as well as to the public health of the country generally, which it is so important to maintain at the present time. We do not for a moment urge that the public health service of the country should in all respects go on "as usual." Some branches of the work, such as that of medical inspection of school children, can be substantially reduced; younger men acting as assistant officers for tuberculosis dispensaries or isolation hospitals can be replaced by senior men and undertake army service, as many have done already. Factory chimneys may be allowed to go unwatched for a while, and routine housing inspection and other ordinarily necessary matters may well be curtailed. But epidemics must not only be met if they arise, but must be prevented with all possible vigilance, and dangerous environmental conditions must be as vigilantly sought out and dealt with as in times of peace. This means that the maintenance of an efficient public health service at home is essential, and it is well to have on record at this juncture that this necessity is as strongly realised by the army authorities as by the central civil public health department.

Annotations.

"Ne quid nimis."

THE SUPPLY OF DRUGS AS AFFECTED BY THE WAR.

WE have heard perhaps too much of the shortage of drugs. As a matter of fact, when we remember the extent to which this country had allowed itself to become dependent upon Germany for its supply of drugs, it is remarkable that after eight months of war there should be hardly any drugs of importance that are not obtainable in at least small quantities. Notwithstanding the steady drain on stocks that has been going on all this time, and the fact that the main source of direct supply has been cut off, it is really astonishing to find that drugs which up to the end of July last had been obtained almost exclusively from Germany can still be secured in reasonable quantities. Prices have naturally advanced very seriously, and some drugs, as stated in THE LANCET of March 20th (p. 625), are seven or eight times as dear as they were before the war. But the important question is not one of the price of drugs, but of being able to obtain them, and at the present time it would be possible to secure at least a small supply of almost any recognised medicinal product without great difficulty. This result is due to two main causes—namely, the importation of drugs from neutral countries, and the wise and prompt measures taken by the Government in consultation with medical and pharmaceutical authorities to husband the drug

supply. In the scheme for conserving our stocks of medicinal products the individual members of the medical profession have played a very useful part, and there is every reason to believe that medical men have loyally coöperated with the professional committee appointed by the Government in August last[1] by acting upon the suggestions made by the committee with regard to the economical prescribing of those drugs which appeared in the earliest stage of the war to be likely to become scarce. It was already foreseen that supplies of such products as the salicylates, the bromides, and potash salts might in due course be insufficient for a normal demand; but since the beginning of August experience has shown that there are other drugs which must be used with economy, while owing to the receipt of consignments of bromides from the United States there does not appear at the moment any need to put these drugs into the same class as the salicylates for example; although it cannot be foreseen whether the imported supplies of bromides will continue indefinitely. Among the drugs of which stocks are now low and difficult to replenish are the following: Carbolic acid, salicylate of soda, salicylic acid, acetylsalicylic acid, salol, novocaine, eucaine hydrochloride, benzamine lactate, atropine, thymol, barbitone, better known under its familiar name of veronal, paraldehyde, phenazone, and phenacetin. These, together with lanolin, constitute a list of drugs which, in the opinion of the medical committee above referred to, should be prescribed with economy, although it is not to be inferred that the drugs named are so scarce that they should be withheld in cases in which they are really needed. The reason for the inclusion of carbolic acid in the list is that it is required for war purposes, but there is not the slightest reason why carbolic acid should not continue to be prescribed as usual for internal administration since the quantity required is extremely small; similarly, weak solutions for gargles and other parallel uses would absorb a comparatively minute quantity of the available stock. When large quantities of disinfectants and antiseptics are required, however, it would be advisable to substitute where possible one or other of the many germicidal preparations of which supplies are plentiful, as, for instance, cresol soap solution. As to salicylic acid and the salicylates, the strictest economy is undoubtedly indicated for the present; there is a probability that supplies of these drugs will be rather more plentiful in due course, but in the meantime stocks are very low. There is, however, such a large consumption of acetylsalicylic acid by people who "doctor" themselves that the economical prescribing of this drug by the medical profession will not be very effective, and it is unfortunate that some reasonable means cannot be devised to prevent the wastage of this product at the present time; it is little use for the medical profession to be economical if the public is extravagant. As regards local anæsthetics, there is a fair supply of cocaine. But even cocaine is becoming scarcer and dearer and should therefore be prescribed economically. The scarcity of atropine is serious, and the present outlook for increased supplies is not hopeful; the shortage is not due to the absence of the raw material, for belladonna root and leaves are perhaps less scarce than they were a short time ago, supplies having arrived from the Balkans. There is still, of course, the hope of further supplies of atropine from neutral countries and of the alkaloid being produced here, but in the meantime the advice of the committee to prescribe it with the strictest regard for economy should be followed. For barbitone some other hypnotic can be substituted in most cases, while there are other antipyretics which can be prescribed instead of phenazone and phenacetin. The scarcity of lanolin is perhaps not very pronounced, as this ointment base is now being made in this country; but other bases can be employed quite successfully, and it is understood that the Germans are using as a substitute soft paraffin with from 5 to 10 per cent. of beeswax. The list of drugs that should be used economically has been recently made the subject of a communication to all medical men; the list is drawn up on sound principles, and if the medical profession continues to coöperate in conserving supplies of the indicated drugs there need be no inconvenience from the cutting off of German supplies.

[1] THE LANCET, August 22nd, 1914, p. 528.

LOWER DEATH-RATE *V.* LOWER BIRTH-RATE.

THE effect which the war will have in diminishing the birth-rate throughout the kingdom cannot at present be estimated. That it must be considerable admits of no question, and the maintenance of the supply of human beings necessary for the re-establishment of the nation's prosperity is likely to be a source of anxiety to this and coming generations. In this connexion it is pointed out by those interested in the prevention of infant mortality that if little can be done to increase the number of births by causing married couples to realise the importance of bringing children into the world, from the point of view of safeguarding their country's prosperity, much, nevertheless, may be achieved in the direction of protecting those lives of infants which under existing social conditions are sacrificed. The National Association for the Prevention of Infant Mortality and for the Welfare of Infancy has issued its annual report for 1914 from its offices at 4, Tavistock-square, W.C., and will no doubt welcome all accessions to its membership and contributions to its funds. In the *Manchester Guardian* we notice an interesting correspondence has taken place, among the contributors to which have been Lady Selborne and Mr. J. R. Ormerod. The former, quoting from statistics of 1911, gives the rate of deaths in their first year of children born in New Zealand as 58 per 1000, and the rate here as 130 per 1000, and invites us not to waste the lives that we produce. The latter suggests, as a step towards the desired end, the extension of medical benefits under the Insurance Acts to all children. This he regards as a natural sequence to the granting of maternity benefit, which, he observes, needs to be revised and, perhaps extended. Subject to the condition that this can be done without exploiting the medical profession, and with the offer of proportionate consideration for increased services rendered, we should say that practical good might result from it. Another possible contribution to the same result is urged in a letter by Dr. Barbara Tchaykovsky, who "feels very strongly that the first step in any baby-saving crusade just now is the immediate placing of the Notification of Births Act on the Statute-book as a compulsory measure throughout the kingdom." This step, Dr. Tchaykovsky believes, would assist the work done by municipal health visiting

agencies, voluntary health societies, and kindred organisations, and would tend to help the newly born infant through the first month of life, in which one-third of the present infant mortality occurs. The same writer calls attention to the probability of a large increase in the births of illegitimate children occurring in the neighbourhood of military camps and to the possibility of preventing by sympathetic measures a "veritable slaughter of the innocents." The whole subject, no doubt, is one of great importance, and, moreover, is one which, if it is to be attended to effectively, must be taken in hand without delay, for, as we have observed, the extent to which the numerical increase of the population will be interfered with by the war is now a matter as to which we can only speculate. All that we know is that possibly the next few months will witness slaughter of the flower of the nation's manhood as great as that which has already taken place, and that while we await with bated breath the result of the struggle, we may be able also to do something to mitigate its inevitable and dire consequences.

CONVULSIONS DURING PERTUSSIS: CURE BY PUNCTURE OF THE LATERAL VENTRICLE.

THE following case is reported by Dr. Louis Fischer in the *New York Medical Journal* (1914, vol. c., p. 1054). A baby, aged 8 months, suffered from an ordinary attack of whooping-cough for two weeks, when it began to have both tonic and clonic convulsions. These continued for two days, convulsions recurring at one time every six hours. They were not relieved by injections of chloral hydrate and potassium bromide per rectum. Nor did chloroform anæsthesia afford relief. Lumbar puncture, too, proved unsuccessful. It was decided to aspirate the right ventricle of the brain. The frontal lobe was pierced through the anterior fontanelle, and 22 c.c. of an almost clear cerebro-spinal fluid were withdrawn. The convulsions ceased and the baby made a complete recovery. The aspirating needle recommended is 3·2 inches in length, introduced downwards and towards the median line at an angle of about 20 degrees to the depth of about 1·8 inches. The needle then enters the lateral frontal portion of the ventricle.

THE POLICE AND ALLEGED LUNATICS.

A LETTER addressed to the *Times* of April 8th by Mr. Holcombe Ingleby, M.P., is calculated to raise grave doubts as to whether the discretionary powers given to the police by Section 20 of the Lunacy Act, 1890, may not in some respects be wider than the safety of the public and of alleged lunatics demands. At any rate, it should receive consideration from those to whom the treatment of persons supposed to be in the early stages of insanity is a matter of interest. Although there are, no doubt, two sides to the story which Mr. Ingleby has told, with apparent fairness, from one point of view, it is difficult to see how any modification of detail can affect the main points raised by his narrative. To recite briefly the facts of the case, an elderly lady went to Scotland Yard to report her suspicion of the presence of German spies in the neighbourhood of the boarding-house where she lived. The rank of the official with whom she had her interview is not stated, and what took place between them is left to our imagination, but as a result the police then and there arrested the lady and conveyed her to a workhouse, in which institution she was kept until on the third day she was released by the authority of the justice of the peace before whom she was brought, this being within the limit of time prescribed by the Act. The Chief Commissioner, in a letter written to the lady after her release, said, "Of course, inquiry shows that this (the removal to the workhouse) was wholly unnecessary, and I need hardly say how greatly I regret the inconvenience and distress of mind caused to you by the action of one of my officers." The Chief Commissioner has also authorised the statement that the police officials acted in strict accordance with their duty as laid down by the law, as well as with consideration and kindness towards the lady, and that Mr. Ingleby's statement of the case was not in accord in all particulars with the facts as known to himself. It appears from Mr. Ingleby's letter that no legal action is likely to be taken by the lady, further particulars of whose adventure will be found in the document referred to. Possibly it might be difficult for her to recover damages. Section 20, referred to above, under which, presumably, the police acted, provides that: "If a constable, relieving officer, or overseer is satisfied that it is necessary for the public safety or the welfare of an alleged lunatic with regard to whom it is his duty to take any proceedings under this Act that the alleged lunatic should before any such proceedings can be taken be placed under care and control, the constable, relieving officer, or overseer may remove the alleged lunatic to the workhouse of the union where the alleged lunatic is, and the master of the workhouse shall ..... receive and relieve, and detain the alleged lunatic therein, but no person shall be so detained for more than three days, and before the expiration of that time the constable, relieving officer, or overseer shall take such proceedings with regard to the alleged lunatic as are required by this Act." Apparently this section was complied with; it does not say that it is the duty of the officer to take reasonable care to satisfy himself that it is necessary to remove the alleged lunatic; as long as he is himself satisfied that is enough.[1] There is no obligation or recommendation to call in a medical practitioner, and, indeed, to do so does not relieve the officer of his responsibility.[2] It would appear, then, that the police in this matter acted strictly in accordance with the law, as the Chief Commissioner claims that they did. At the same time, with the passage above quoted from Sir Edward Henry's letter to the lady before us, we are driven to the conclusion that a somewhat marked lack of sound judgment and discretion was exhibited at Scotland Yard, where, if anywhere in the United Kingdom, "the constable" might be expected to display judgment and discretion, or to have access to higher authorities for the direction of his actions. Further, if information was given of her predicament to the lady's relatives or friends, it only had the effect of bringing them to the workhouse on the third day. Mr. Ingleby seems to be of the opinion that there was undue delay in communicating with them, and we must remember that in London communication can usually be made both easily and rapidly if desired. As a result, therefore, of the police taking steps, authorised by the law, and taken by them, no doubt, with the best intentions possible, a

[1] See Hayward *v.* Hackney Union, 14 T.L.R. 306.
[2] See Thompson *v.* Schmidt, 8 T.L.R. 120.

lady, probably not in robust health, who may have suffered from an exaggerated apprehension with regard to German spies, but who hardly on that account alone could have been dangerous to herself or to the public, suffered 52 hours' confinement as a pauper lunatic. The medical man who attended her in the workhouse did not, it is stated, regard her as insane, but had no power to order her release; and in due course the magistrate, who, acting in strict accordance with the law, seems to make a practice of attending every three days at the workhouse in question, put an end to a situation which ought never to have arisen. Why there should be no provision for the summoning of a medical man at the earliest possible moment to decide what in some cases may be a simple question, but may in many instances be beyond the scope of the intelligence and training of a constable, relieving officer, or overseer, is by no means plain. The law as it stands may afford a convenient and effective means for placing promptly under observation or control cases brought to the notice of the police; but the law would be strengthened not weakened in its effectiveness if the calling in of a medical practitioner, whenever this was possible, were also enjoined, so as to shift the responsibility to the shoulders best adapted for the burden.

PLASTIC TRACHEITIS AND BRONCHITIS.

IN the *Medical Journal of Australia* of Feb. 13th Dr. H. Laurie and Dr. H. C. Colville have reported a case of a very rare condition—plastic tracheitis and bronchitis. A married woman, aged 45 years, was taken to the Alfred Hospital, Sydney, with the diagnosis of œdema of the glottis due to chronic nephritis. She was of stout build and was suffering from urgent dyspnœa accompanied by marked whistling stridor. There were cyanosis and retraction of the neck and intercostal spaces. Preparations were made for tracheotomy, but she improved slightly. Her colour returned and the retraction diminished, although the whistling stridor was still marked. A more thorough investigation was then made. The patient had been well until a week before admission when she contracted a "bad cough." This got worse until three days before, when the dyspnœa began. She had always been healthy except for an attack of rheumatism in the previous winter. The temperature was 99° F. and the pulse 100. The heart sounds were inaudible. No adventitious sounds could be detected over the lungs. The vesicular murmur was very weak. The point of maximum intensity of the stridor was over the manubrium sterni and not over the larynx, as would have been expected in œdema of the glottis. Pulv. jalapæ co. was given, and six leeches, followed by a hot pack, were applied to the front of the neck. The patient's condition remained much the same for four hours, and then, in a severe spell of coughing, a blood-stained cylindrical cast about 2 in. long and nearly ¼ in. in diameter was expelled. It appeared to have been formed in the trachea. The dyspnœa at once improved. The question of diphtheria immediately arose. A swab was taken from the throat and found to contain a pure culture of Hoffmann's bacillus. The breathing continued to improve, and on the following night a similar cast was expelled, consisting of a complete mould of the trachea and right and left bronchi. Further improvement followed and the patient could speak in a whisper. During the next few days small fragments of similar membrane were coughed up and rhonchi were heard over the front of the right lung near its root. The expectoration for several days was profuse and at first blood-stained. The voice gradually returned, and the patient was discharged ten days after admission feeling well except for a little huskiness and a slight cough. In plastic bronchitis, according to Dr. William Ewart, the condition is confined to the smaller bronchi—"from the tubes of the diameter of a goose-quill (rarely of much larger size) down to the finest ramifications." In this case the trachea, both main bronchi, and the larger tubes on the right side were affected. The smaller bronchi and bronchioles were absolutely free.

TRANSFERENCE OF THE HUTCHINSON MUSEUM TO AMERICA.

THE closing of the Polyclinic has been followed by the acquisition of the Hutchinson Museum by the Johns Hopkins Medical School. The loss to this country of the remarkable and unique collection of original drawings, coloured plates, and photographs, which represent the life-work of one of the greatest clinicians of the age, is to be deplored. Though the value of drawings has been recognised since the earliest times of clinical study, excepting the splendid collection of wax models at the St. Louis Hospital, Paris, no previous attempt had been made to illustrate systematically the appearances of disease in the living subject. No practising surgeon has approached Sir Jonathan Hutchinson in the number of types of disease he observed, described, and, whenever possible, illustrated pictorially. In the opening address delivered at the Polyclinic in 1900 on Post-Graduate Study,[1] Sir William Osler said of him: "He is the only great generalised specialist which the profession has produced, and his works are a storehouse upon which the surgeon, the physician, the neurologist, the dermatologist, and other specialists freely draw." The collection consists of: (1) Original coloured drawings, of which there are many hundreds; (2) coloured plates taken from atlases, books, and memoirs; (3) engravings, woodcuts, photographs, and pencil sketches, very often with the letterpress or manuscript notes attached. They illustrate the whole range of medicine and surgery, but particularly the life work of the collector in syphilis and skin diseases. It is "probably the most remarkable iconography on syphilis ever made." Taken at random, the labels on some of the rarer items show the minuteness with which this protean disease is illustrated: circumcision chancres, syphilitic herpes, recurrent chancres, vaccination syphilis, keloid. While regretting the loss to our country of this valuable and unique collection, we are pleased that it has found a home in the most famous of the American medical schools where, perhaps, it may be put to greater use than here, as the teaching which it embodies must be less familiar, but those who have had the pleasure of seeing the remarkable and enthusiastic man who made this collection employ it in teaching will feel that in its demonstration there will be one irreparable loss. However rare the case sent to Hutchinson he could parallel it from his collection of portraits, and from the vast storehouse of a most tenacious memory relate histories. For the conventional labelling of a malady with a name, which is called diagnosis, he had almost a contempt. His plan was to take type cases, to describe them in detail, to

[1] THE LANCET, June 12th, 1900, p. 73.

illustrate them whenever possible by drawings, and to place similar cases beside them. His object always was to discover causes rather than to name. With all this minuteness he combined a wide and bold philosophic grasp. No clinician ever focused light from so many sources on a subject. From the rare case he passed to the other rare cases of the same kind in his knowledge, then perhaps he passed to another field of disease, regarded as entirely different and showed analogies unsuspected, or he passed to the ordinary and showed that it and the extraordinary were only phases of the same process. Or, moving still more widely, he illuminated the subject by an illustration from plant pathology or from ordinary life or by a quotation from the poets.

PUNCTURE OF THE CORPUS CALLOSUM AS A DECOMPRESSIVE MEASURE.

THE ordinary results of temporal decompression for brain tumour are only partially satisfactory; it is suggested that only 10 per cent. of such cases are operated upon with success. There are especially to be considered in these cases the extremely severe headaches and vomiting which form such distressing features, and any measure which can relieve these symptoms must be welcomed, whether or not such a procedure is associated with more extensive proceedings directed to the tumour mass itself. An operation of this nature has been practised with considerable success; it consists in puncture of the corpus callosum, and the technique is not held to be very difficult. It has for its object the relief of tension in the ventricles in the brain, a condition which is held to be largely responsible for the symptoms—a condition, in fact, allied to internal hydrocephalus present in many cases of brain tumour. Such relief is effected by allowing communication between the ventricles and the subdural space superior to the corpus callosum. Dr. Elsberg, discussing his results at a meeting of the American Neurological Association on May 7th, 1914,[1] stated that he had had 30 cases, and in more than half of them the general symptoms had been markedly relieved by the operation. No matter what the pressure conditions within the skull the operation did good. Where, however, there was no internal hydrocephalus the procedure was useless. He also stated that radical removal of the tumour should be done wherever possible; decompression has its field as a temporising method or in non-removable or non-localisable intracranial neoplasms. As regards the dangers of the operation, these are not great. He quotes von Brahmann as having done 57 operations without any ill effect, and Dr. Elsberg himself had done 39 without mortality. Further results by more observers will be awaited with interest.

PARLIAMENT resumed sitting on Wednesday, April 14th.

[1] Journal of Nervous and Mental Diseases, 1914, vol. xli., p. 726.

THE LATE AUGUSTUS WILLIAM DALBY, L.R.C.P., L.R.C.S. EDIN.—Mr. Dalby, a highly respected medical practitioner at Frome, Somerset, died recently at Weymouth. After qualifying as L.R.C.P. and L.R.C.S. Edin. in 1884, he commenced practice in Frome, and was for many years medical officer of health for the Frome rural district. He was an enthusiastic Volunteer, and was lieutenant-colonel of the 2nd South-Western Mounted Brigade Field Ambulance.

PUBLIC HEALTH OFFICERS AND THE WAR.

THE question of granting leave of absence to medical officers of health, assistant medical officers of health, medical officers of isolation hospitals, and tuberculosis officers, who have obtained the permission of their councils to accept temporary appointments in the army, is one that has exercised many of the officers concerned and their authorities, and frequent allusions to it have appeared in our columns. We have made inquiries as to the practice of the Local Government Board in giving permission to the officers to take such leave of absence, and the attitude of the Board will be clearly seen by what follows.

The Local Government Board sent the following circular letter to the county councils and sanitary authorities on August 12th last:—

Local Government Board, Whitehall, S.W.,
12th August, 1914.

SIR,—The Local Government Board wish to draw the attention of local authorities to the great importance of maintaining the efficiency of the sanitary service of the country at the present time. In many areas the medical officers of health and other officers engaged in public health work will be giving their services to the navy or army, and it will be necessary for the local authority to make other arrangements for carrying on their work. It is essential that there should be no relaxation of the activities of local authorities in the prevention and control of epidemic diseases, the protection of water-supplies from contamination, and the promotion of child-welfare, and in securing the wholesomeness of food-supplies and the general sanitary condition of each area. On this account it is important that all vacancies in the minor sanitary staff should be filled up.

The actual steps which may be open to local authorities to replace medical officers of health who are absent on naval or military duty will vary in different districts. In many areas adequate temporary arrangements may be made by coöperation between the county and district authorities or between neighbouring district authorities. The Board will be glad to be informed of each case in which a medical officer of health or chief sanitary inspector or inspector of nuisances has been given leave of absence for naval and military service, and of the steps taken to arrange for the temporary discharge of his duties.

I am, Sir, your obedient Servant,
(Signed) H. C. MONRO, Secretary.

Since then nearly 100 whole-time medical officers of health out of a total of 314 have, with the consent of their councils and of the Board, taken temporary commissions in the Royal Army Medical Corps. About the same number of part-time medical officers of health and many medical men holding other posts under county councils and sanitary authorities have also given their services to the army. Each application to the War Office from a medical officer employed by a local authority is, in accordance with an arrangement made between the two departments, referred to the Local Government Board as to whether the medical officer making the application can properly be spared from his civil duties. So far it has not been necessary for the Board to object to the granting of a temporary commission to any medical officer who has applied, as in each case temporary arrangements have been made for carrying on the officer's work.

From the beginning of the war local authorities and their sanitary officials have rendered valuable assistance to the military authorities which the Army Council have acknowledged in the following

letter from the Assistant Secretary to the Army Council, which appears in a circular issued by the Local Government Board this week to county councils, sanitary authorities, port sanitary authorities, and medical officers of health, an abstract of which will be found on p. 833 of this issue of THE LANCET:—

War Office, London, S.W., March 25th, 1915.

SIR,—I am commanded by the Army Council to inform you that they have had under consideration the assistance which local public health authorities, under the guidance of the Local Government Board, have rendered since the outbreak of the war to troops stationed in their administrative areas. They are of opinion that this assistance in the unexampled circumstances of the last eight months has been invaluable in safeguarding the health of the forces and in preventing the spread of infectious disease to an extent which would have been otherwise impracticable, and I am to ask that the Local Government Board will be so good as to convey to the councils of the counties, boroughs, and sanitary districts concerned the thanks of the Army Council for the work thus undertaken. I am in particular to refer to the valuable services which have been given by medical officers of health, sanitary inspectors, and other officials of the local authorities in coöperating with the army sanitary service.

The Army Council trust that during the coming summer months they may continue to secure the assistance, advice, and coöperation of these authorities and their expert officers, under the general supervision of the Board's medical inspectors, with a view to maintaining the present favourable record as to disease among troops stationed in camps and billets in the United Kingdom.

I am, Sir, your obedient Servant,

(Signed) B. B. CUBITT.

The Secretary, Local Government Board, Whitehall, S.W.

The Army Council concur with the Board in attaching great importance to the action taken by sanitary authorities and their officers in safeguarding the health of the forces and in preventing the spread of infectious disease, and they regard the action taken by sanitary authorities as an integral part of the precautionary measures necessary to protect the health of the troops at home. The Board are of opinion that serious risk of calamity would be involved if, during the coming months, sanitary authorities were to relax their efforts or were unable to take the necessary action because they are inadequately staffed or have only inexperienced officers.

Subject to these considerations the Board are assenting to proposals for medical officers to take service in the army whenever this can safely be done. The Board have accepted temporary arrangements whereby the services of a senior practitioner are substituted for those of a junior medical officer both for sanitary and for hospital work. The tuberculosis organisation in each county and county borough is largely concerned with the treatment of sick persons, and some arrangement must be made for carrying it on. There should therefore be, in every such area, a tuberculosis officer available to advise both the Council and the Insurance Committee for the area. As a rule it is not desirable that both the medical officer of health and the tuberculosis officer shall be absent from their duties. Where local authorities have given their officers leave of absence they have almost invariably done so on such terms as not to involve them in any financial loss or other disadvantage.

INFANT MORTALITY IN SOMERSET.—At the last meeting of the Somerset county council the medical officer of health, Dr. W. G. Savage, stated that during the past ten years the death-rate in the rural districts was 75·9 per 1000 of children under 1 year of age, and in urban districts 90·8, a low rate compared with the rate in the country generally.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Edinburgh University Graduation Ceremony.

A GRADUATION ceremony in connexion with the University of Edinburgh was held on March 30th in the McEwan Hall, when the degrees were conferred by Principal Sir William Turner. The usual boisterous note of the students was lacking, the reason for the quiet and subdued nature of the proceedings being indicated, no doubt, by the presence among the graduates of a large number wearing His Majesty's uniform. For a spring graduation the numbers "capped" was unusually large. Sir William Turner, in his address to the graduates, said their ceremony that day was marked by an important difference from the ordinary graduation ceremonies which had been formerly held—the predominance of the military element. Not only were many of the graduates in uniform, but degrees had been conferred upon other graduates *in absentia* because the recipients of the degrees were either at the front or were otherwise engaged in the forces on active service. That was not the only point of interest, however, for the number of graduates at this season of the year was above the average, because the Senatus, acting, he might say, on behalf of the nation, had given opportunities to students to present themselves for graduation at this time instead of asking them to wait until the ordinary summer graduation. In giving this special privilege, the students had to show themselves in their examinations worthy of that special privilege. That was to say, the graduate must have attended all the courses of instruction before appearing for the degree, and had to pass, also, the examination with credit to himself and to the University. It was important that the public outside should know what had been done. How the war had reacted upon the academic life was evident from the fact that the University had had to part with about 1000 of its male students. The University had lost largely in its income, and more than 2000 of its students, graduates, and staff had joined the forces in one capacity or another. The University had been called upon to participate in a great national movement, and they owed a great deal to the Officers Training Corps, which was under the direct charge of a military committee of the University, having the sanction of the War Office. In this connexion he desired to look back as far as the year 1859, when there was a great national movement in connexion with a possible invasion. The nation was then stirred to resolve itself into a series of volunteer corps, and the students of to-day were doing only what their predecessors had done in 1859. The students of that day entered into the task with as much enthusiasm as the men of to-day, and the University students formed themselves into what was known as No. 4 Company, the great Edinburgh Battalion. He was a member of that company and a volunteer, and having served for 30 years in it he passed through the various grades of rank from the lowest which was then known as "ensign," now an obsolete rank. He claimed the Officers Training Corps as the direct descendant of No. 4 Company, for, if he was right in his recollections, the old volunteer company of the University was not disbanded when the disbandment of the volunteers took place under the new War Office régime, but was continued as the corps to which many of the students now belonged.

Drink and the War: Public Opinion in Edinburgh.

Edinburgh is not an industrial centre in the accepted sense of the term, and is not to any extent concerned in the production of munitions of war. Nevertheless, by reason of the fact that it is one of the leading brewing centres in the country, the proposed prohibition of the drink traffic, consequent on the state of affairs in the ship-building and other industrial areas, has for it a very special interest. It goes almost without saying that the licensed trade is strongly and unanimously against any measure of the kind that have been indicated. There is, in their opinion, no call for any such drastic action in Edinburgh, and naturally they do not care to distinguish between their own district and such areas as Clyde-side. It is stated that drunkenness in the city, judged in the light of police statistics, is below the normal. While the majority of the opinions of those not directly concerned in the liquor trade appear to favour prohibition, there was an important section against any proposal of the kind. One leading public man declared that in his opinion this merely represented the thin edge of the wedge. "We are told," he said, "that this is to be only for the time being, but I am confident that an attempt will be made to make the prohibition a permanent thing. Experience abroad, and especially in America, has been that you get more drunkenness in the prohibitionist States than anywhere else." Another prominent citizen declared that his position was briefly this—to have a total prohibition of all spirituous liquors, such as whisky, brandy, and gin, but to make no such regulations regarding beer. It was his opinion that the riveters and men engaged in similar work must have drink of some kind, and he did not think the drinking of beer would in any way interfere with the work of production. He was convinced, however, that for such measures to be in the least efficacious they must be universal, applying to clubs no less than to public-houses. An interesting corroboration of his point of view was furnished by the head of one of the largest manufacturing firms in the district. The question of the stoppage of the whisky traffic was discussed at a soirée which was held by the employees, and the managing director was so much struck by the point of view which the men indicated that he there and then proposed that they should have a referendum on the subject. The ballot was secret, and the result was a vote of 90 per cent. in favour of prohibition of whisky until the war is over. The question of beer-drinking was not voted on. The men's views were admirably summed up by one of their speakers in the following manner: "The immediate completion of the war or its prolongation evidently now means a question between efficiency and inefficiency. If drink means inefficiency then drink must be stopped."

Views of Edinburgh Medical Men on the Drink Question.

From a number of interviews with medical men in Edinburgh representative opinions were obtained in regard to the effect of drink on the general efficiency of the worker. A prominent panel practitioner said that there had not been much increase in drinking during the war among working men, but he had observed that there had been a considerable increase in the consumption of liquor among a certain class of women in receipt of war money. "Edinburgh is not," he remarked, "like places in the west country with their big ship-building yards and engineering works. I would not say that men in Edinburgh are drinking more than they were before." Another leading medical man thought that as a rule long hours were not responsible for increased drinking among the workers. If a man got occasional or intermittent extra long hours he might find that drink would help him along, but if he were working a few extra hours a day regularly, provided he used his spare time with discretion, he did not find the necessity for a stimulant. It was more likely that extra wages had made some of the workers more prodigal of their money. He thought that there was no question that the medical profession would favour prohibition. Another practitioner, who at present has a panel list on which there are about 2000 names, said that he had only just come across his first case of a man being laid up through nervous strain, brought on by overwork since the beginning of the war. He did not believe for a moment that extra work was knocking down workers. With fair rest a man could get along nicely working 12 hours a day. Long hours, in his opinion, did not directly induce drinking. From his experience the war had not increased the incidence of drinking. He also mentioned the interesting fact that there had been less illness among the poor. He had the duty of examining applicants for parish outdoor relief in his district, and for the last month the number was 8, compared with 16 last year. There was more work, and they either did not bother about medical attention or the fact of being at work kept them well. A medical man with a large practice among the working-class population in the western district of the city said it had not been noticed that there had been any increase in drinking among the workers in the city since the outbreak of war. Work, and plenty of it, he believed to be one of the greatest aids to sobriety and good living. He was of opinion that total prohibition would be a mistake. Civilisation was not sufficiently far advanced at the present day to permit of that. If drinking was stopped altogether he thought the result would simply be that the evil tendencies of the worst elements of the population would break out in another direction, with probably the direst consequences. His own idea was that a much better plan would be for the Government to prohibit all strong drink, such as whisky, rum, and brandy, and permit the sale and consumption of beers of a very light alcoholic strength, and wines.

Edinburgh Royal Maternity and Simpson Memorial Hospital.

Dr. James Haig Ferguson has succeeded Dr. F. W. N. Haultain as physician on duty, and Dr. George F. Barbour Simpson has succeeded Dr. J. Lamond Lackie as assistant physician, both for the quarter to June 30th, 1915.

April 12th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Honorary Degrees at the National University.

HONORARY degrees were conferred by the Senate of the National University at its last meeting under unusual but distinctly interesting circumstances. Some 60 years ago there was founded in Dublin, under the rectorship of John Henry Newman, the Catholic University of Ireland; it consisted of several faculties, including medicine,

but not having a charter it had no power to confer degrees. The Senate of the National University, considering the position of the past students of the Catholic University, conferred honorary degrees upon many who "having during their student days, for conscientious reasons, refrained from attending institutions where they could have obtained university degrees, and in place thereof having resorted to the Catholic University, which was unable to grant them that privilege." Among those who received degrees were the following medical men:—

LL.D. (*Honoris Causa*).—Lieutenant-Colonel John Joseph Crean, A.M.S.; Mr. George Unthank Macnamara; Surgeon-General Thomas Maunsell, C.B.; Dr. Joseph Francis O'Carroll; and Colonel James Patrick Rooney, R.A.M.C. *In absentia:* Mr. Nicholas Thomas Connolly; Right Hon. Michael Francis Cox, M.D.; Mr. William Creagh; Surgeon-General Sir Charles MacDonagh Cuffe, K.C.B.; Lieutenant-Colonel Charles Boromeo Jennings, A.M.S.; Lieutenant-Colonel Ignatius O'Farrell, A.M.S.; and Major Patrick Walter Stafford, A.M.S.

M.D. (*Honoris Causa*).—Mr. Thomas Joseph Crean, Mr. Nicholas Furlong, Mr. Thomas Laffan, Mr. John M'Cullagh, Mr. Charles Stennett Redmond, Sir Joseph Michael Redmond, Mr. Charles O'Lomasny Ronayne, Mr. John Ryan, and Mr. Denis Walshe. *In absentia:* Mr. Richard Cannon, Mr. Matthew Kearney, Mr. John Kilbride, Mr. Charles William M'Carthy, Mr. Constantine Joseph MacGuire, Mr. Thomas M'Kenna, Mr. Daniel Aloysius O'Sullivan, Mr. Joseph Quirke, Mr. James Patrick Ryan, and Mr. Edward Aloysius Stephenson.

Royal College of Physicians of Ireland.

At the last meeting of the Royal College of Physicians of Ireland Dr. J. J. Gannon was elected a Fellow of the College.

Cerebro-spinal Meningitis.

Since Dec. 8th, 1914, up to and inclusive of April 10th, 1915 (when 4 new cases were admitted), 47 patients were received into Purdysburn Municipal Fever Hospital, Belfast, with cerebro-spinal meningitis; while 3 were treated in the surrounding districts. Of these 50 cases of cerebro-spinal fever 10 have died, which gives a mortality of a little over 22 per cent. These cases have been treated with three varieties of serum—i.e., Flexner's, from the Rockefeller Institute, New York, Dopter's, from the Pasteur Institute, Paris, and Mulford's, from Philadelphia. It is too soon to give any opinion as to which of these serums affords the best results, though there seems to be a preference among practitioners for Flexner's. From the experience at Purdysburn Hospital it is clear that when serum is used within the first 24 hours of the onset of the disease infinitely better results are obtained; and, further, in cases in which the serum was used early recovery has taken place, even when within less than a day from the beginning of the attack the patient was covered with a petechial rash, and when on lumbar puncture the cerebro-spinal fluid was found to be purulent. It is therefore more prudent to risk sending a patient into hospital on a mistaken diagnosis than to wait for certainty, thereby depreciating the results of serum-therapy.

The late Samuel Hamilton, M.D. R.U.I.

Dr. Samuel Hamilton died suddenly, from angina pectoris, on April 4th, at his residence, Ballynahinch, co. Down. A sudden strain about a year ago warned him that his heart was not strong, and he thereupon gave up night work, but otherwise continued at work until two days before his death, when he developed a severe cold, during which two attacks of angina, the last a fatal one, occurred. Dr. Hamilton, who was a native of Dromara, studied at Queen's College, Belfast, where he graduated as M.D., M.Ch., of the Royal University in 1882, and M.A.O. in 1885, and was noted as an athlete. He settled in practice in Ballynahinch in his native district, where by his cheery manner and professional skill he obtained a large practice, and was greatly liked. In 1891 he married a daughter of Professor Witheron, D.D., of Londonderry, who, with two sons—one of whom is a lieutenant in the R.A.M.C.—survive him. Dr. Hamilton was buried in Dromara on April 6th.

Richard Crossett, L.R.C.P. & S. Edin.

The death is announced at his residence, Cookstown, co. Tyrone, of Mr. Richard Crossett, after a prolonged illness. A native of Londonderry, Mr. Crossett studied at Queen's College, Belfast, and in 1876 became a Licentiate of the Royal College of Physicians and Surgeons of Edinburgh. Forty years ago he began practice in Moneymore, but soon afterwards he removed to Cookstown, where he built up a large practice and where he has resided ever since. In addition to leading a busy professional life, he took his share in the public business of Cookstown, where for a time he was a town commissioner and for upwards of 30 years he was consulting sanitary officer of the Cookstown union. He retired from active practice four years ago.

April 12th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Vaccine Treatment of Leprosy in India.

VACCINE for the treatment of leprosy, prepared from the streptothrix isolated by Major T. S. Beauchamp Williams, I.M.S., has been supplied by the Bombay Bacteriological Laboratory to various parts of India and other parts of the world. Owing to the slow progress of the disease, the recurring attacks of fever with extension of the leprosy lesion, and the periods of remission and temporary improvement even in untreated cases, it is difficult to arrive at any conclusion as to the usefulness of the vaccine as a method of treatment. Generally speaking, it may be said that some cases appear to improve under treatment, some remain stationary, while others show no improvement at all. A report by Major J. R. J. Tyrrell, I.M.S., Nowgong, shows that he had nine cases under treatment long enough to test the vaccine. Seven improved by treatment, while two showed slight, if any, change. None were any worse, and one had been under treatment for 10 months, one for eight, one for seven, two for four, two for three, and two for two months.

Plague in the Punjab: Iodine in the Treatment of Plague.

The plague returns for the month of February show that 23,389 deaths were reported in the province of the Punjab during the month, the weekly returns having been, Feb. 6th, 4492; Feb. 13th, 5285; Feb. 20th, 7798; and Feb. 27th, 5814. A decrease was thus disclosing itself at the end of the month, but throughout the period practically all parts of the province were affected.

The last report of the Bombay Bacteriological Laboratory includes an account of experiments made to test the efficiency of the treatment of plague

cases by tincture of iodine. Some of the cases were treated by giving five drops of tincture of iodine every three hours by the mouth, while iodine was applied locally to the buboes. Others were treated by injecting seven minims of the tincture in saline solution intravenously once every 24 hours as recommended by Captain F. Powell Connor, I.M.S. A set of control cases were treated by the method ordinarily adopted by Dr. Choksey at the Mahratta Plague Hospital. Excluding the cases with many plague bacilli in their blood before treatment was commenced, there were 4 recoveries out of 9 cases among the control cases, 8 recoveries out of 12 cases treated by iodine by the mouth, and 3 recoveries out of 10 cases treated by iodine intravenously injected, the number of cases treated not being sufficiently large to allow definite conclusions to be drawn.

The Abuse of Cocaine in India: the Effect of the War.

Stewards and seamen of the Austrian-Lloyd boats have played a prominent rôle in the illicit trade in cocaine. The profits ensured to successful smugglers and retailers are far in excess of those accruing from dealings in any other form of intoxicant, for victims of the cocaine habit are prepared to pay extravagant prices for the gratification of their desires. Under the most favourable circumstances the supply is limited and fluctuating. The demand, on the other hand, is certain and constant, and hence prices are liable to violent fluctuations. A few years ago, when the Punjab Government followed the example of other provincial administrations and included cocaine in the list of prohibited intoxicants, an immediate and abnormal rise in prices ensued all over India. The supply had been cut off at one of its few remaining sources and retailers were as yet uncertain as to the success that would attend their smuggling projects. When achievement outstripped anticipation the prices fell. The war may be expected to reproduce these conditions in a more exaggerated form, even if it has not already done so. Communications with the old supplying firms have ceased, and many of the erstwhile smugglers are either fighting for their country or interned in foreign ports. New sources have to be discovered and new agents have to be engaged. In the meantime, the cocaine devotee will be put to many shifts to obtain his dose of injection. His field of inquiry will be enlarged and his chances of discovery proportionately increased. So also with the retailer. The certain prospect of enormous profits will tempt him to relax a little of his customary caution. He will approach every available source of supply, not forgetting the Government stocks. There may be a revival of direct negotiations with wholesale chemists, British and French firms taking the place of German and Austrian. Cocaine will be sent in a large consignment of other drugs under a false label, and invoices will be so manipulated as to deceive the Customs. Such methods are difficult to detect, but with a temporary depression in sea-borne trade the Customs establishment should be able to devote greater attention to the examination of consignments from doubtful firms to suspected consignees. The situation is thus peculiarly favourable to a repressive policy, and active coöperation between the Excise and Customs departments in all parts of India should lead to excellent results. If the Indian Government now fails to initiate a vigorous anti-cocaine campaign it may anticipate a progressive increase in the consumption of this dangerous poison as soon as normal conditions are re-established.

The Health of Bombay.

In his survey of the health of the city during the last year the executive health officer of Bombay comments on the improved health conditions in the city as portrayed in the decreased mortality from all causes, but reminds the corporation that in order still further to improve upon these results more consideration should be given to sanitary improvements that have been suggested. In times of epidemic the schemes for improvement of sanitary conditions in the city were readily enough sanctioned, but when health conditions were approaching those of a Western city the necessity for persisting in sanitary reform was apt to be lost sight of. He emphasises the fact that the steady decrease in mortality is not due to the outlay of large sums in sanitary improvement, for during the last 14 years no large outlay has been undertaken in Bombay. He refers in particular to insanitary areas in the city, regarding which a scheme of reform was presented to the corporation ten years ago, and if this scheme had been carried out and the areas improved, reduction in the mortality rate would have been more marked, the work of the health department would have been greatly facilitated, and the condition of the city would have been very much improved. Satisfactory as it may be to look back on the steady decline in mortality, in spite of many difficulties, it would have been more satisfactory to feel that alongside the work that has been done in organising, supervising, and controlling the public health administration of Bombay something substantial and permanent had been effected so as to maintain the position arrived at and create a lasting improvement in the public health of the city.

March 20th.

THE HEALTH OF THE NAVY IN 1913.

THE report on the health of the Royal Navy for 1913 is somewhat shorter than usual, owing to the absence of any original articles on professional subjects by medical officers; these are intended to be published in a naval medical journal, to be issued quarterly. There is also a general compression of material, on account of the mobilisation that took place in August last, when the report was being prepared.

Satisfactory Health Condition of the Navy.

The returns again show a continuous and satisfactory improvement. The total strength for the year 1913 was 126,830, an increase of 7290 over that for the previous year. Of this number, 103,730 were serving either in the Home Fleet or on the Home Station; the remaining 23,100 being distributed among the seven fleets and squadrons serving abroad. For the total force the ratio of sickness has been 610·5 cases per 1000 of strength, a considerable improvement compared with the ratio for the preceding five years 1908–12, which was 656·6. The average number of men daily on the sick list has been 23·79 per 1000, compared with 26·97; the deaths have been 3·24, compared with 3·23; and the final invalidings 13·53, compared with 16·23 per 1000. All of these ratios are also below those of the preceding year. The highest admission ratio was, as usual, on the East Indies Station, 998 per 1000. This was higher than the quinquennial ratio of 971 for 1908–12, and also higher than the ratio for 1912, which was 948. The death ratio on this station (10·8 per 1000) was also higher than the quinquennial ratio (9·25) and the ratio for 1912 (5·55). The highest ratio of daily sick in hospital, 33·27, also occurred on the East Indies Station, a rather lower figure than that for 1912, which was 33·51, but still much higher than the quinquennial average of 29·06. Next come the Home

Station with 28·59 per 1000 daily sick, and the Irregular List with 27·94. The healthiest command was the Mediterranean, with a ratio of 20·21 daily sick, the Home Fleet being nearly as healthy with 20·66, and the West Atlantic and Fourth Cruiser Squadron (formerly known as the North America and West Indies and Training Squadron) with 20·73 per 1000. The Home Station (consisting of depôts and training ships and hospitals) daily sick ratio of 28·59 was an improvement on the quinquennial average of 35·26 per 1000.

The most numerous admissions to hospital were, as usual, for diseases of the digestive system, in the ratio of 107 per 1000. Venereal diseases caused 93 admissions per 1000, a considerable improvement on the quinquennial average of 116, the chief reduction being in the prevalence of secondary syphilis. Of the most important diseases, pneumonia was the only one that showed a slight increase, 4·69, compared with 4·21 admissions per 1000. Malaria (3·5) and tuberculosis (1·93) were well below the quinquennial averages. There were only 4 cases of Mediterranean fever throughout the whole navy, with no death. The most fatal diseases were pneumonia (38 deaths), tuberculosis (34), enteric fever (31), and organic disease of the heart (21). The respective ratios, 0·29, 0·26, 0·24, and 0·16 per 1000, were slightly higher than the averages for tuberculosis and enteric fever, slightly lower for pneumonia and heart disease. The chief causes of invaliding were heart disease (2·07 per 1000), nervous diseases (1·76), and tuberculosis (1·64), showing slight reductions on the respective quinquennial averages.

Prevalence of the Chief Diseases.

Small-pox is thus referred to, on the *lucus a non lucendo* principle; it did not prevail anywhere. Only 5 cases occurred; 3 of these were on board the *Conqueror* at Devonport. The first was a man who had been on leave shortly before; all were mild cases, being modified by previous vaccination. One case occurred at Port Said and 1 at Shanghai; these also were mild cases, for the same reason. On each occasion the ship's company were revaccinated. No spread of the disease occurred in spite of the unavoidable close contact with the rest of the crew. Influenza (1324 cases) showed a continued reduction on previous years. It was of mild type, chiefly in the Home Fleet and Home Station and on the Australian Station; only one death occurred, owing to pneumonia. A few cases were admitted in all the commands, except at the Cape. There were 414 cases of scarlet fever, of which 321 were on the Home Station. Outbreaks occurred on the *Powerful* (94), the *Impregnable* (86), and at the Youths' Training Establishment (47). The origin was not traceable in either instance. The general character of the disease was mild, but cardiac failure caused death in 5 cases. Extensive epidemics of mumps are reported in the Plymouth training ships and establishments and elsewhere. Not only boys were affected, but on several ships many cases also occurred among stokers, especially on the *Vivid* and *Victory*.

There were 123 cases of diphtheria, with 5 deaths; 105 of these cases and all the deaths occurred on the Home Station. An outbreak of 33 cases on the *Impregnable* was due in the first instance to a boy who contracted the disease when on leave. Cases continued to appear from January until September, all among the boys, and it is regarded as probable that there were several separate infections. If this was the case it seems strange that effective measures were not taken to prevent spread of infection time after time. On the *Ganges* there were 18 cases and on the *Powerful* 11 cases, also considered to have been sporadic, having "apparently occurred at intervals throughout the year." Of 8 cases on the *Victory* 4 occurred amongst cooks' mates who slept in the same room; some explanation of this, with dates of onset, might have been afforded. Eight cases of cerebro-spinal fever were admitted, 4 being returned from the *Victory;* 2 occurred in March among stokers, the other 2 (a boy and a stoker) in April and May; in 3 of the cases no growth could be obtained from lumbar puncture. Two cases were reported from the *Pembroke* among stokers in April and May. Two other solitary cases were returned, one from the *Centurion*, the other from the *King George V.* Nothing could be traced as to source or mode of infection.

Enteric fever caused 123 admissions and 31 deaths; 34 cases were on the Home Station, 16 being from the *Vivid*, appearing at intervals. No source of infection was traced. For several years this ship, which is stationed at Plymouth, has had a heavy incidence of enteric fever. Ten cases occurred on the *Formidable* of the Home Fleet, on which ship there had also been some prevalence during 1912. Exhaustive investigation as to the origin of infection, and particularly as to the possibility of the presence of a carrier case on board, has not so far yielded any positive result. Only 4 cases of Mediterranean fever were admitted throughout the whole navy. One of these occurred at Malta, possibly due to eating goats' milk cheese. Another was a Maltese, an habitual drinker of unboiled goats' milk. The other two cases occurred in the Home Fleet, but are not alluded to in the remarks. Presumably they were not fresh cases, but readmissions. There were 62 cases of dysentery, of which 31 were returned from the China Station, occurring chiefly among men at Shanghai, Hong-Kong, and elsewhere during the revolutionary outbreak. No cases were fatal. Of the 31 China cases 10 were reported as amœbic and 6 as bacillary.

Pneumonia continues to be the most fatal disease in the navy. There were 38 deaths, giving a ratio of 0·29 per 1000, which is, however, lower than the quinquennial average of 0·33. The total number of cases was 595, of which 341 (with 24 deaths) were from the Home Station and 196 (with 11 deaths) from the Home Fleet: 78 were admitted from the *Impregnable*, 45 each from the *Ganges* and *Vivid*, and 43 from the *Pembroke*. No remarks are made as to possible causation or nature of the incidence; some information would have been acceptable on these points. There were 445 cases of malarial fever (3·5 per 1000), less than the quinquennial average (4·7), but more than in 1912 (2·55). 128 cases were admitted on the East Indies Station; 48 of these were from the Bombay Sailors' Home, which is situated in a malarial district, and in the grounds of which rain-water had been allowed to collect, forming a focus of infection. Tuberculosis continues to show a decline in prevalence; the admissions numbered 245, representing a ratio of 1 93 per 1000, compared with the quinquennial ratio of 2·59; and the daily sick 56, or 0·44, compared with 0·57 per 1000. In 191 out of the 245 cases the disease affected the lungs. The East Indies Station had the highest case ratio, 3·2 per 1000. The sick berth staff, with a ratio of 8·1, suffered much more than the other ratings, that for ordinary seamen being only 1·84 per 1000. Venereal diseases show an improvement in every particular; the admissions were 93·17 per 1000, compared with 116·02 in the preceding quinquennium. The constantly sick ratio was 5·19 as against 7·41, and the invaliding 0·81 compared with 1·20 per 1000. These affections caused most inefficiency on the China Station with an admission ratio of 151·11, while in the Home Fleet this was only 92·80 per 1000. Owing chiefly to improved methods of treatment there was much shorter average stay in hospital—i.e., less loss of service—than in previous years. Although the average strength of the navy has increased considerably, the total number of days lost to the service through sickness of this nature was less than in 1912 by 27,800 days, and less than in 1911 by 67,507 days.

There were 15 cases of beri-beri, 8 being reported on the *Perseus* in the Persian Gulf. Rats were found, and a mongoose, which was procured to kill the rats, after a month became paralysed, the various limbs, and finally the diaphragm being affected in turn. This suggests rat transmission; there was no undue rat mortality on board. Four cases of infection by Schistosomum japonicum were recorded from the China Station; 2 were officers who contracted the disease snipe-shooting in paddy fields, and 2 were engine-room artificers infected by wading in river water, with feet and legs bare, while applying a new propeller to the *Woodcock*. In these latter cases the incubation period was determined to be about 40 days. None of the men had waded in water over the knee-joint, so that infection did not occur per anum. There were 76 deaths from drowning, 10 of which occurred when a cutter belonging to the *Perseus* disappeared during bad weather in the Persian Gulf. There were 5 cases of wounds in action (one fatal), sustained during a punitive expedition on the Tungistan Coast.

The prompt appearance of this report, embodying the statistics of the preceding year derived from the most distant parts of the world, is very creditable to the departments concerned. As to the state of health of the Royal Navy, it can be described as most satisfactory.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

Summary of Reports for Month ending Jan. 31st, 1915.

1	2	3	4	5	6	7	8	9	10	11	12
			Metric tons of deposit per square kilometre during month.								
			Insoluble matter.			Soluble matter.			Included in soluble matter		
Place.	Correspondent.	Rainfall in millimetres.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO_4).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND—											
Birmingham, Central ...	Dr. J. Robertson, M.O.H.	72	0·15	5·29	13·16	2·70	7·00	28·30	4·40	0·60	0·04
,, Aston	,,	67	0·08	1·11	3·43	1·10	4·00	9·70	2·00	0·40	0·04
,, S.W.	,,	80	0·05	0·75	2·20	0·70	2·60	6·30	1·20	0·40	0·02
Bolton	Dr. J. E. Gould, M.O.H.	158	0·03	1·12	3·30	5·67	9·44	19·56	4·88	2·24	0·13
Exeter	Mr. F. Southerden.	83	0·04	1·03	2·34	1·56	3·59	8·56	1·50	1·00	0·02
Kingston-upon-Hull	Mr. A. R. Tankard, Public Analyst.	64	0·08	2·34	4·18	2·69	4·22	13·51	2·90	0·48	0·08
Liverpool	Dr. E. W. Hope, M.O.H.	93	0·22	2·03	7·25	2·22	4·44	16·17	3·47	0·59	2·58
London—											
Meteorological Office ...	Director, THE LANCET Laboratory.	82	0·21	1·09	6·07	6·67	5·86	19·90	3·22	1·17	0·07
Embankment Gardens...	Mr. J. Ollis, Chief Officer, Public Control Department, L.C.C.	90	0·14	3·18	6·42	0·71	8·08	18·55	4·47	0·95	0·07
Finsbury Park...	,,	107	0·14	1·63	3·18	2·56	4·69	12·25	3·12	0·68	0·15
Ravenscourt Park	,,	80	0·06	0·96	2·18	0·67	6·08	9·95	2·10	0·74	0·03
Southwark Park	,,	96	0·10	3·63	6·08	2·11	6·14	18·06	3·41	0·71	0·13
Wandsworth Common ...	,,	78	0·03	0·65	2·16	1·40	2·97	7·21	2·23	0·44	0·02
Victoria Park	,,	96	0·07	1·78	3·56	3·27	6·74	15·42	5·20	0·71	0·05
Golden Lane	Dr. W. J. Howarth, M.O.H	94	0·07	2·46	3·83	2·36	4·51	13·12	3·64	0·73	0·10
Malvern	Mr. W. Osborne Thorpe, Engineer U.D.C.	64	Trace.	0·35	0·07	0·54	1·39	2·06	0·74	0·24	0·01
Manchester—											
Ancoats Hospital	Mr. J. Warrington, Secretary, Air Pollution Advisory Board.	128	0·08	4·32	12·23	2·25	11·21	30·59	6·59	1·53	0·11
Bowdon	,,	106	0·01	0·50	1·56	0·72	3·46	6·25	1·36	0·83	0·07
Cheadle	,,	109	0·06	2·29	3·62	1·08	3·58	10·63	2·22	0·84	0·06
Davyhulme	,,	104	0·01	0·90	3·90	1·12	6·75	12·68	3·48	1·08	0·08
Fallowfield	,,	116	0·07	1·47	4·61	1·11	5·98	13·24	3·35	0·97	0·07
Moss-side	,,	125	0·19	2·32	6·12	1·70	8·36	18·69	4·69	1·37	0·13
Philips Park	,,	120	0·13	3·18	7·47	2·93	8·88	22·59	5·13	1·69	0·06
Queen's Park	,,	123	0·08	1·84	7·77	1·33	9·16	20·18	5·43	1·38	0·06
School of Technology ...	,,	118	0·12	3·73	9·49	1·89	7·37	22·51	4·45	1·41	0·10
Whitefield	,,	124	0·05	1·40	5·42	1·19	7·47	15·53	4·45	1·06	0·08
Newcastle-on-Tyne	Dr. H. Kerr, M.O.H.	50	0·12	3·65	5·36	2·97	3·77	15·87	2·85	0·32	0·13
Oldham	Dr. J. B. Wilkinson, M.O.H.	119	0·27	5·68	11·69	4·78	11·46	33·80	5·11	0·93	0·14
Sheffield—											
Attercliffe Burial Ground	Prof. W. P. Wynne, The University.	62	0·13	3·78	8·46	1·49	6·17	20·03	2·45	1·79	0·15
Hillsborough Park	,,	71	0·08	1·27	4·54	1·25	4·94	12·08	2·04	0·64	0·04
Meersbrook Park	,,	76	0·08	1·56	4·03	1·52	4·70	11·89	2·20	0·85	0·05
Weston Park	,,	83	0·08	1·38	3·79	1·53	5·65	12·43	2·72	0·93	0·04
York...	Dr. E. M. Smith, M.O.H.	65	0·11	1·49	3·14	2·34	3·63	10·71	1·71	0·64	0·50
SCOTLAND—											
Leith	Mr. Thomas Bishop, Sanitary Inspector.	23	0·03	0·80	2·68	1·20	1·82	6·73	0·97	0·20	0·18
Greenock	Mr. J. Devine, Sanitary Inspector.	87	Bottle burst by frost.			1·32	2·74	—	1·53	0·67	0·11
Paisley	Mr. W. W. Kelso, Sanitary Inspector.	67	0·16	4·92	5·82	2·66	3·20	16·76	1·72	0·49	0·06
Stirling	,,	42	0·23	2·04	2·36	1·84	2·54	9·01	1·73	0·45	0·08

Col. 4 includes all matter insoluble in water but soluble in CS_2. Col. 5 includes all combustible matter insoluble in water and in CS_2. Col. 6 includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall (see Col. 3).

The analytical work involved in these returns was undertaken respectively by J. F. Liverseege, F.I.C., Birmingham; Harry Hurst, B.Sc., F.I.C., Bolton; F. Southerden, B.Sc., F.I.C., Exeter; A. R. Tankard, F.I.C., Kingston-upon-Hull; W. H. Roberts, M.Sc., F.I.C., Liverpool; S. A. Vasey, F.I.C., Director, THE LANCET Laboratory (London Meteorological Office collections); J. H. Coste, F.I.C. (Embankment Gardens, Finsbury Park, Ravenscourt Park, Southwark Park, Wandsworth Common, Victoria Park collections), London; F. L. Teed, D.Sc., Golden-lane, London, E.C.; C. C. Duncan, F.I.C., Malvern; E. Knecht, Ph.D., M.Sc., Ancoats Hospital, Bowdon, Cheadle, Davyhulme, Fallowfield, Moss-side, Philips Park, Queen's Park, School of Technology, Whitefield (Manchester collections); J. T. Dunn, D.Sc., Newcastle-on-Tyne; Professor W. P. Wynne, Attercliffe Burial Ground, Hillsborough Park, Meersbrook Park, Weston Park (Sheffield collections); S. H. Davies, M.Sc., York; J. W. Biggart, F.I.C., Greenock; A. Scott Dodd, B.Sc., F.I.C., and R. M. Clark, B.Sc., Leith, Stirling, and Paisley respectively; Messrs. R. R. Tatlock and Thomson, Coatbridge. The correspondents referred to in col. 2 are for the most part public health authorities.

DEATH OF EDWARD THOMAS ERNEST HAMILTON, B.Sc., M.D., M.S. LOND., F.R.C.S. ENG.—Dr. Hamilton died at his residence in Johannesburg, South Africa, on March 8th. He was born at Rathgar, near Dublin, in 1867, and was the son of a former surgeon in the Royal Navy. Entering Guy's in 1886, he became a distinguished student there, carrying off a large number of honours. He took the Conjoint qualification of the London Colleges in 1891. At London University he took the B.Sc. in 1889, the M.B., B.S. (first class honours in medicine and surgery) in 1892, the M.D. in 1893, and the M.S. in 1895. He became F.R.C.S. in 1893. He was for four or five years a demonstrator of anatomy at Guy's. In 1898 Dr. Hamilton went out to South Africa and started practice on the Rand. During the Boer War he served as medical officer on one of the hospital ships and in various hospitals ashore. After serving with the rank of major in the field during the recent rebellion Dr. Hamilton became principal medical officer at Swakopmund, the chief port of German South-West Africa, now in British occupation, where he developed an intestinal complaint, and, being much run down from pressure of work, he was ordered to Johannesburg to recuperate. There he became subject to attacks of mental depression, and it is supposed that in one of these fits he terminated his life, as he was found with a fatal bullet wound in his head. Much sympathy is felt for his widow. His funeral took place with military honours.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

A QUARTERLY meeting of the Council was held on April 8th, Sir W. WATSON CHEYNE, the President, being in the chair.

It was resolved:—

That the best thanks of the Council be and are hereby given to Mr. Arthur H. Cheatle for presenting to the College his large collection of specimens illustrating the surgical anatomy of the temporal bone which the Council regard as a most valuable and useful addition to the Museum. The Council also desire to express to Mr. Cheatle their high appreciation of his services in arranging and cataloguing the whole series of otological specimens, and to record their grateful sense of the care and attention which Mr. Cheatle had so freely devoted to this task.

It was also resolved:—

That the best thanks of the Council be and are hereby given to Mr. Alban Doran for his valuable services in arranging and cataloguing the obstetrical and gynecological instruments in the Museum.

In accordance with the recommendation of the Jacksonian Committee the Jacksonian prize for the year 1914 was awarded to the writer of the essay bearing the motto: "With the Help of a Surgeon He Might yet Recover." When the envelope bearing this motto was opened it contained the name of Mr. Jonathan Hutchinson. The subject of the essay was the Pathology, Diagnosis, and Treatment of Trigeminal Neuralgia.

It was resolved that the subject for the Jacksonian prize for the year 1916 should be the Methods and Results of Transplantation of Bone in the Repair of Defects caused by Injury or Disease.

The John Tomes prize was awarded to Mr. James Frank Collier for his scientific work on Comparative Dental Anatomy and Pathology.

In accordance with a report of the examiners in anatomy under the Conjoint Board, it was resolved to appoint Mr. Joseph Clinton Collins, of the London Hospital Medical School, the Begley student for the ensuing three years.

The Council elected to the Fellowship the following two Members of 20 years' standing: Mr. Frederick George Larkin, of Grove Park, and Professor Johnson Symington, of Belfast.

Sir Alfred Pearce Gould was re-elected the representative of the College on the Senate of the University of London.

Dr. G. Bellingham Smith was appointed the representative of the College on the managing committee of the British Hospital for Mothers and Babies at Woolwich.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Philip Norman Button has been appointed Surgeon for temporary service in His Majesty's Fleet.

The undermentioned have been granted a temporary commission as Surgeons in His Majesty's Fleet:—Robert Henry Herdman Newton, William Ernest Boyd, and William Francis Bowen.

The following appointments have been notified:—Temporary Surgeons: H. A. Hewatt, J. B. Crawford, and R. H. H. Newton to the *Victory*, additional, for Haslar Hospital; S. L. Harke to the *Chatham;* and J. G. Watkins to the *Impregnable*.

ROYAL NAVAL VOLUNTEER RESERVE.

The following appointments have been notified:—Surgeon Probationers: R. Sandilands to the *Avon;* F. McG. Ferguson to the *Albatross;* A. O. Ross to the *Stour;* A. R. Oram to the *Test;* N. Jennings to the *Waveney;* E. P. Hicks to the *Druid;* and T. R. F. Kerby to the *Minstrel*.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Captains to be Majors:—Dated Feb. 28th: Arthur C. H. Gray, Douglas P. Watson, Thomas S. Dudding, John E. Powell, Osburne Ievers, Robert H. MacNicol, Hugh H. J. Fawcett, Santiago L. Pallant, Charles R. Sylvester-Bradley, Stanley E. Lewis, Gerard A. Kempthorne, James T. McEntire, Norman E. Dunkerton, Patrick J. Hanafin, John D. Richmond, Marmaduke C. Wetherell, Harold C. Hildreth, William MacD. MacDowall, Reginald T. Collins, Thomas J. Wright, and Arthur C. Osburn.

Herbert Clifford Barclay to be temporary Major (dated March 8th).

Temporary Lieutenant Malcolm C. R. Grahame to be temporary Captain (dated April 10th).

The undermentioned are granted temporary rank whilst serving with the Liverpool Merchants Mobile Hospital:—Dated March 25th: Lieutenant-Colonel: Nathan Raw, late Lieutenant-Colonel, Royal Army Medical Corps, Territorial Force. Major: Thomas Caldwell Litler Jones and Major Arthur Augustus Mussen, Royal Army Medical Corps, Territorial Force. Captain: John Hayward and Stanley Raw. Lieutenant: Harold Bowring, John Miller Woodburn Morison, and Henry Wallace Jones.

Temporary Lieutenant-Colonel (Major, Royal Army Medical Corps, Territorial Force) William A. Turner relinquishes his temporary commission (dated March 29th).

Temporary Captain F. Armstrong having ceased to serve with the Welsh Hospital, relinquishes his commission (dated March 31st).

David Llewelyn Williams to be temporary Captain whilst serving with the Sanitary Section of the Welsh Division (dated Jan. 13th).

Captain Robert J. B. Buchanan, from the Half-pay List, is restored to the establishment (dated March 30th).

Emrys Roberts to be temporary Captain whilst serving with the Field Ambulances of the Welsh Division (dated Jan. 29th).

Arthur Meurig Pryce to be temporary Lieutenant whilst serving with the Field Ambulances of the Welsh Division (dated March 4th).

The undermentioned to be temporary Lieutenants:—Dated Nov. 21st, 1914: Stephen Grange Askey, Percival Courtenay Cole, and Ambrose Wilfred Owen. Dated March 8th: James Leonard Octavius Tilley. Dated March 9th: George Stanley Phillips and Martin Ainger Kirton. Dated March 10th: William Mary O'Connor and William Wagner Turner. Dated March 12th: Horace Burcham Binks, Alexander Hugh Davidson, Samuel Kenny McKee, Robert Noel Thomson, and Arthur Canston Freeth. Dated March 14th: John Vassie Buchanan. Dated March 15th: Michael Louis Neylon, Edward Holmes Rainey, Norman Walmesley Steinberg, Henry Harrison Rudolf Bayley, Lionel Walter Kennedy Scargill, Edward Colston Williams, James Hutchison, John Alexander Douglas Radcliffe, George Riddoch, Victor Joseph McAllister, William Wilson Thomson, Lawrence Drew Shaw, and Arthur Thomas Paterson. Dated March 16th: Russell Vyvyan Steele, Sidney Ernest Elphick, Edward John Eedle, Richard Brinsley Hunt, Charles Stuart, Evan Greene, George Robert Lawless, Montague Albert Farr, Norman Douglas Mackay, Ernest Hamilton Kenny, and Hamilton Mathewson. Dated March 17th: John Walker Wood, John Stewart Caldwell, William Morrison, Rowland Hill Scovell, Owen Henry Bowen, Joseph Currie Lorraine, William Wilkie Scott, and Alfred James Anderson Peters. Dated March 19th: Thomas Graham Brown and Robert Slaney.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Percy Barnard Corbett to be Lieutenant.

The undermentioned Lieutenants are confirmed in their rank:—William B. Jepson and Noel H. W. Saw. Peter MacCallum, Cadet of the Officers Training Corps, to be Lieutenant (on probation).

TERRITORIAL FORCE.

Army Medical Services.

Major G. St. C. Thom, R.A.M.C., vacates the appointment as Deputy Assistant Director of Medical Services, Lowland Division (dated Feb. 21st).

Major Alexander M. McIntosh, from 3rd Lowland Field Ambulance, to be Deputy Assistant Director of Medical Services, Lowland Division (dated Feb. 21st).

Royal Army Medical Corps.

3rd East Anglian Field Ambulance:—Captain Samuel Hughes, from 5th Southern General Hospital, to be Captain (temporary).

2nd Northumbrian Field Ambulance: Herbert Bruce Low (late Captain, 7th Battalion, Durham Light Infantry), to be Captain (temporary).

1st South Western Mounted Brigade Field Ambulance: William Arnold Milner to be Lieutenant.

1st West Lancashire Field Ambulance: Leonard Boole Stott to be Lieutenant.

1st South Midland Field Ambulance: William James Hirst to be Lieutenant.

2nd Welsh Field Ambulance: John Phillip Henry Davies to be Lieutenant.

1st Eastern General Hospital: James Christian Simpson to be Captain, whose services will be available on mobilisation. Robertson Campbell Canney (late Cadet Corporal, London University Contingent, Senior Division, Officers Training Corps) to be Captain, whose services will be available on mobilisation.

1st Southern General Hospital: Arthur Christopher Tibbits to be Lieutenant.

2nd Southern General Hospital: Captain Francis H. Edgeworth to be Major.

1st London (City of London) Sanitary Company: Lionel Watson Hignett to be Lieutenant.

2nd London Sanitary Company: Captain Reginald O. Sibley, from the 4th London General Hospital, to be Captain.

1st London Casualty Clearing Station: Cecil Arthur Robinson to be Lieutenant.

South Midland Casualty Clearing Station: Lieutenant-Colonel William H. Stephen, from 1st South Midland Mounted Brigade Field Ambulance, to be Lieutenant-Colonel.

3rd London General Hospital: Major Arthur W. Mayo Robson, C.V.O., is seconded.

3rd Southern General Hospital: The undermentioned officers are seconded under Paragraph 112, Territorial Force Regulations: Lieutenant-Colonels William T. Freeman and William J. Maurice; Majors George S. Abram, Lansdown M. Guilding, John A. P. Price, and Robert Ritson; Captains Norton B. Clowes, George H. R. Holden, George F. Murrell, Walter B. Secretan, and Fielding Clarke.

2nd London (City of London) General Hospital: Captain Edwin H. Fenwick to be Lieutenant-Colonel (temporary), and is seconded.

Attached to Units other than Medical Units.—Thomas Frankish (late Lieutenant-Colonel, 1st East Lancashire Brigade, Royal Field Artillery), to be Major. To be Lieutenants: James Mathews Heron and Henry William Lance. Lieutenant-Colonel and Honorary Surgeon-Colonel Charles Downing resigns his commission on account of ill-health, and is granted permission to retain his rank and wear the prescribed uniform. Major Robert W. Forrest is placed on Half-pay List on account of ill-health.

DEATHS IN THE SERVICES.

Lieutenant-Colonel William Sandilands Harrison, R.A.M.C., on April 12th, at Haslingden, Lancashire. He became a lieutenant in the Royal Army Medical Corps in 1895, was made a captain in 1898, major in 1906, and was promoted to the rank of lieutenant-colonel last year. He served with the Tirah Expeditionary Force during the operations on the North-West Frontier of India in 1897–8 (medal with clasp). After pursuing research work in Jamaica on tropical diseases he was invalided home, and his death at the early age of 43 years is directly attributable to his investigations.

Deputy Inspector-General Henry L. Crocker, R.N., has been awarded a Greenwich Hospital pension of £50 a year.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last census, 8048 births and 6885 deaths were registered during the week ended Saturday, April 3rd. The annual rate of mortality in these towns, which in the three preceding weeks had been 19·7, 19·3, and 19·8 per 1000 of their aggregate population, estimated at 18,134,239 persons at the middle of this year, was again 19·8 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 19·6, against 20·6 per 1000 in London. Among the several towns the death-rate in the week under review ranged from 8·2 in Gloucester, 8·9 in Bath, 9·6 in Wimbledon, 10·5 in Darlington, and 10·6 in York, to 27·2 in Middlesbrough, 28·0 in Gateshead, 31·1 in Dudley, 32·4 in West Hartlepool, and 36·1 in Northampton.

The 6885 deaths from all causes were 6 in excess of the number in the previous week, and included 826 which were referred to the principal epidemic diseases, against 739 and 695 in the two preceding weeks. Of these 826 deaths, 495 resulted from measles, 157 from whooping-cough, 77 from infantile diarrhœal diseases, 69 from diphtheria, 16 from scarlet fever, and 12 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 2·4, or 0·4 per 1000 higher than in the previous week. The deaths attributed to measles, which had been 373, 421, and 397 in the three preceding weeks, rose to 495 in the week under notice, and caused the highest annual death-rates of 3·5 in Coventry, 3·8 in Sheffield, 3·9 in Carlisle, 4·1 in Acton, 4·3 in Merthyr Tydfil, 5·2 in St. Helens, 6·5 in Wolverhampton, 8·6 in Northampton, and 11·3 in West Hartlepool. The deaths referred to whooping-cough, which had been 120, 151, and 127 in the three preceding weeks, rose to 157; the highest death-rates from this cause were 1·3 in Southampton, 1·6 in Middlesbrough, 1·9 in Barnsley, 2·0 in Carlisle, 2·1 in Bootle, 2·5 in Merthyr Tydfil, and 4·0 in Wigan. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 77, 63, and 70 in the three preceding weeks, rose to 77, of which 18 were recorded in London, 8 in Birmingham, 6 in Middlesbrough, and 4 each in Liverpool and Leeds. The deaths attributed to diphtheria, which had been 51, 61, and 58 in the three preceding weeks, rose to 69, and included 16 in London, 4 each in Birmingham, Liverpool, Manchester, and Sheffield, and 3 each in Warrington, Rotherham, and Cardiff. The deaths referred to scarlet fever, which had been 21, 29, and 31 in the three preceding weeks, declined to 16, of which 5 occurred in London, 3 in Salford, and 2 in Oldham. The fatal cases of enteric fever, which had been 15, 14, and 12 in the three preceding weeks, were again 12 in the week under notice, but showed no excess in any particular town.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 5036 to 2672 in the 18 preceding weeks, had further fallen to 2543 on Saturday, April 3rd; 253 new cases were admitted during the week, against 275, 289, and 301 in the three preceding weeks. These hospitals also contained 1369 cases of diphtheria, 371 of measles, 46 of enteric fever, 14 of whooping-cough, and 3 of small-pox. The 1849 deaths from all causes in London were 86 fewer than in the previous week, and corresponded to an annual death-rate of 21·3 per 1000. The deaths referred to diseases of the respiratory system, which had been 442, 478, and 481 in the three preceding weeks, fell to 475 in the week under notice, but were 195 above the number registered in the corresponding week of last year. The deaths from influenza numbered 45, against 54, 67, and 65 in the three preceding weeks.

Of the 6885 deaths from all causes in the 96 towns 195 resulted from different forms of violence and 414 were the subject of coroners' inquests, while 1804 occurred in public institutions. The causes of 64, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Leeds, Bradford, Newcastle-on-Tyne, and in 54 other smaller towns. Of the 64 uncertified causes, 14 were registered in Birmingham, 9 in Liverpool, 8 in Gateshead, 5 in Stoke-on-Trent, 4 in Warrington, 3 in Sheffield, and 2 each in Bootle, Darlington, South Shields, and Tynemouth.

In the 96 English and Welsh towns 8710 births and 6922 deaths were registered during the week ended Saturday, April 10th. The annual rate of mortality in these towns, which had been 19·3, 19·8, and 19·8 per 1000 in the three preceding weeks, further rose to 19·9 per 1000 in the week under notice. The annual death-rate last week ranged from 8·7 in Lincoln, 8·9 in East Ham, 9·2 in Ilford, 10·3 in Gloucester, and 10·9 in Swindon, to 27·6 in Rochdale, 28·6 in Carlisle, 29·3 in West Bromwich, 30·1 in Dudley, and 36·0 in Wolverhampton.

The 6922 deaths from all causes were 37 in excess of the number in the previous week, and included 767 which were referred to the principal epidemic diseases, against 695 and 826 in the two preceding weeks. Of these 767 deaths, 452 resulted from measles, 167 from whooping-cough, 67 from infantile diarrhœal diseases, 49 from diphtheria, 25 from scarlet fever, and 7 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 2·2, or 0·2 per 1000 less than in the previous week. The deaths attributed to measles, which had been 421, 397, and 495 in the three preceding weeks, fell to 452 last week, and caused the highest annual death-rates of 4·0 in Croydon, 4·1 in Smethwick, 4·4 in Sheffield and in Stockton-on-Tees, 5·5 in Walsall, 5·7 in West Hartlepool, 5·9 in Carlisle, 6·0 in West Bromwich, 6·9 in Northampton, and 8·7 in Wolverhampton. The deaths referred to whooping-cough, which had been 151, 127, and 157 in the three preceding weeks, further rose to 167 last week, and included 50 in London, 11 in Wigan, 10 in Liverpool, 6 in Birmingham, 5 each in Sheffield and Merthyr, and 4 each in Bristol, Nottingham, Bradford, and Newcastle-on-Tyne. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 63, 70, and 77 in the three preceding weeks, declined to 67 last week, of which 13 occurred in London and 5 each in Birmingham, Liverpool, and Sheffield, and 4 in Manchester. The deaths attributed to diphtheria, which had been 61, 58, and 69 in the three preceding weeks, fell to 49 last week, and included 11 in London, 4 in Liverpool, and 3 in Northampton. The deaths referred to scarlet fever, which had been 29, 31, and 16 in the three preceding weeks, rose to 25 last week, of which 4 were registered in London, 3 in Sheffield, and 2 each in Nottingham and Cardiff. The fatal cases of enteric fever, which had been 14, 12, and 12 in the three preceding weeks, further fell to 7 last week, but showed no excess in any particular town.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 5036 to 2543 in the 19 preceding weeks, had further fallen to 2505 on Saturday last; 275 new cases were admitted during the week, against 289, 301, and 253 in the three preceding weeks. These hospitals also contained on Saturday last 1346 cases of diphtheria, 347 of measles, 57 of enteric fever, 15 of whooping-cough, and 3 of small-pox. The 1826 deaths

from all causes in London were 22 fewer than in the previous week, and corresponded to an annual rate of 21·1 per 1000. The deaths referred to diseases of the respiratory system, which had been 478, 481, and 475 in the three preceding weeks, further fell to 466 in the week under notice, but were 247 in excess of the number registered in the corresponding week of last year. The deaths from influenza numbered 46, against 67, 65, and 45 in the three preceding weeks.

Of the 6922 deaths from all causes in the 96 towns, 251 resulted from different forms of violence, and 543 were the subject of coroners' inquests, while 1941 occurred in public institutions. The causes of 66, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 63 other smaller towns. Of the 66 uncertified causes, 11 were registered in Birmingham, 10 in Liverpool, 5 in Stoke-on-Trent, 4 in Dudley, and 3 each in Coventry and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,345,500 persons at the middle of this year, 1144 births and 995 deaths were registered during the week ended Saturday, April 3rd. The annual rate of mortality in these towns, which had been 20·9, 20·8, and 21·1 per 1000 in the three preceding weeks, further rose to 22·1 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 22·4, against a corresponding rate of 19·6 per 1000 in the large English towns. Among the several towns the death-rate in the week under notice ranged from 11·3 in Motherwell, 15·3 in Kirkcaldy, and 16·2 in Leith, to 23·3 in Edinburgh, 27·1 in Dundee, and 31·1 in Hamilton.

The 995 deaths from all causes exceeded those in the previous week by 47, and included 181 which were referred to the principal epidemic diseases, against 139 and 132 in the two preceding weeks. Of these 181 deaths, 104 resulted from whooping-cough, 45 from measles, 11 from scarlet fever, 10 from infantile diarrhœal diseases, 6 from diphtheria, and 5 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 4·0, against a corresponding rate of 2·4 per 1000 in the large English towns. The deaths attributed to whooping-cough, which had been 87, 88, and 81 in the three preceding weeks, rose to 104 in the week under notice, and included 60 in Glasgow, 19 in Dundee, 5 in Edinburgh, 4 in Hamilton, and 3 each in Leith, Clydebank, and Ayr. The deaths referred to measles, which had been 15, 26, and 21 in the three preceding weeks, rose to 45, and comprised 31 in Glasgow, 8 in Dundee, 3 in Aberdeen, 2 in Edinburgh, and 1 in Perth. The fatal cases of scarlet fever, which had been 13, 11, and 12 in the three preceding weeks, fell to 11, and included 5 in Glasgow and 2 each in Aberdeen and Paisley. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 5, 6, and 10 in the three preceding weeks, were again 10 in the week under review, of which 5 occurred in Glasgow and 2 in Aberdeen. The deaths referred to diphtheria, which had declined from 15 to 7 in the four preceding weeks, further fell to 6, and comprised 3 in Edinburgh, 2 in Glasgow, and 1 in Paisley. The 5 fatal cases of enteric fever occurred in Glasgow.

The deaths referred to diseases of the respiratory system, which had declined from 264 to 186 in the four preceding weeks, further fell to 162 in the week under notice, and were 4 below the number in the corresponding week of last year. The deaths attributed to violence numbered 21, against 36 and 34 in the two preceding weeks.

In the 16 largest Scotch towns 1291 births and 934 deaths were registered during the week ended Saturday, April 10th. The annual rate of mortality in these towns, which had been 20·8, 21·1, and 22·1 per 1000 in the three preceding weeks, fell to 20·8 per 1000 in the week under notice. Among the several towns the death-rate ranged from 7·6 in Falkirk, 11·8 in Coatbridge, and 12·9 in Clydebank, to 22·6 in Glasgow, 23·8 in Dundee, and 34·7 in Greenock.

The 934 deaths from all causes were 61 fewer than in the previous week, and included 154 which were referred to the principal epidemic diseases, against 132 and 181 in the two preceding weeks. Of these 154 deaths, 75 resulted from whooping-cough, 41 from measles, 18 from infantile diarrhœal diseases, 11 from diphtheria, 6 from scarlet fever, and 3 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 3·4, against 2·2 per 1000 in the large English towns. The deaths attributed to whooping-cough, which had been 88, 81, and 104 in the three preceding weeks, fell to 75 last week, of which 37 were recorded in Glasgow, 11 in Dundee, 9 in Edinburgh, 6 in Greenock, and 5 in Leith. The deaths referred to measles, which had been 26, 21, and 45 in the three preceding weeks, fell to 41 last week, and comprised 30 in Glasgow, 8 in Dundee, and 3 in Aberdeen. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 6, 10, and 10 in the three preceding weeks, further rose to 18 last week, and included 7 in Glasgow and 3 each in Dundee and Kilmarnock. The deaths attributed to diphtheria, which had declined from 15 to 6 in the five preceding weeks, rose to 11 last week, of which 5 occurred in Glasgow and 3 in Edinburgh. The deaths referred to scarlet fever, which had been 11, 12, and 11 in the three preceding weeks, declined to 6 last week, and included 4 in Glasgow. Of the 3 fatal cases of enteric fever, 2 occurred in Glasgow and 1 in Kirkcaldy.

The deaths referred to diseases of the respiratory system, which had declined from 264 to 162 in the five preceding weeks, rose to 182 in the week under notice, and were 45 above the number registered in the corresponding week of last year. The deaths attributed to violence numbered 32, against numbers declining from 36 to 21 in the three preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,212,380 persons at the middle of this year, 597 births and 533 deaths were registered during the week ended Saturday, April 3rd. The annual rate of mortality in these towns, which had declined from 27·6 to 23·9 per 1000 in the five preceding weeks, further fell to 22·9 per 1000 in the week under notice. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 25·4, against corresponding rates of 19·6 and 22·4 per 1000 in the English and Scotch towns respectively. The death-rate during the week under review was equal to 22·9 in Dublin (against 21·3 in London and 23·1 in Glasgow), 23·3 in Belfast, 28·6 in Cork, 10·1 in Londonderry, 13·5 in Limerick, and 26·6 in Waterford, while in the 21 smaller towns the mean death-rate was 23·8 per 1000.

The 533 deaths from all causes were 22 fewer than the number in the previous week, and included 37 which were referred to the principal epidemic diseases, against 36 and 47 in the two preceding weeks. Of these 37 deaths, 13 resulted from whooping-cough, 11 from infantile diarrhœal diseases, 7 from measles, and 3 each from scarlet fever and enteric fever, but not one from diphtheria or from small-pox. The annual death-rate from these diseases was equal to 1·6, against corresponding rates of 2·4 and 4·0 per 1000 in the English and Scotch towns respectively. The deaths attributed to whooping-cough, which had increased from 10 to 16 in the four preceding weeks, fell to 13 in the week under notice, and comprised 10 in Dublin and 3 in Belfast. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 14, 4, and 11 in the three preceding weeks, were again 11, and included 4 each in Dublin and Belfast. The fatal cases of measles, which had been 8, 8, and 12 in the three preceding weeks, fell to 7, and comprised 4 in Belfast and 3 in Portadown. The 3 deaths attributed to scarlet fever, of which 2 occurred in Dublin and 1 in Clonmel, were slightly below the average in the earlier weeks of the quarter. Of the 3 deaths referred to enteric fever 2 were recorded in Cork and 1 in Dublin. In addition to the above deaths a fatal case of typhus was registered in Dublin.

The deaths referred to diseases of the respiratory system, which had declined from 188 to 145 in the four preceding weeks, further fell to 121 in the week under notice. Of the 533 deaths from all causes, 161, or 30 per cent., occurred in public institutions, and 5 resulted from various forms of violence. The causes of 28, or 5·3 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the English towns the proportion of uncertified causes did not exceed 0·9 per cent.

In the 27 town districts of Ireland 633 births and 553 deaths were registered during the week ended Saturday, April 10th. The annual rate of mortality in these towns, which had steadily declined from 27·6 to 22·9 per 1000 in the six preceding weeks, rose to 23·8 per 1000 in the week under notice. The death-rate was equal to 26·1 in Dublin (against 21·1 in London and 22·6 in Glasgow), 21·1 in Belfast, 19·7 in Cork, 15·2 in Londonderry, 36·6 in Limerick, and 41·8 in Waterford, while in the 21 smaller towns the mean rate was 22·9 per 1000.

The 553 deaths from all causes were 20 in excess of the number in the previous week, and included 40 which were referred to the principal epidemic diseases, against 47 and 37 in the two preceding weeks. Of these 40 deaths, 16 resulted from measles, 15 from whooping-cough, and 3 each from enteric fever, scarlet fever, and infantile diarrhœal diseases, but not one from diphtheria or from small-pox. The mean annual rate from these diseases was equal to 1·7, against corresponding rates of 2·2 and

3·4 per 1000 in the English and Scotch towns respectively. The deaths referred to measles, which had been 8, 12, and 7 in the three preceding weeks, rose to 16 last week, and included 6 each in Belfast and Coleraine and 4 in Portadown. The deaths attributed to whooping-cough, which had been 14, 16, and 13 in the three preceding weeks, rose to 15 last week, and comprised 9 in Dublin, 5 in Belfast, and 1 in Cork. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 4, 11, and 11 in the three preceding weeks, declined to 3 last week. Of the 3 deaths from scarlet fever, 2 occurred in Waterford and 1 in Newtownards. The 3 fatal cases of enteric fever were registered in Dublin.

The deaths referred to diseases of the respiratory system, which had declined from 188 to 121 in the five preceding weeks, rose to 158 in the week under notice. Of the 553 deaths from all causes, 151, or 37 per cent., occurred in public institutions, and 7 resulted from various forms of violence. The causes of 17, or 3·1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the English towns the proportion of uncertified causes did not exceed 1·0 per cent.

BOOKS, ETC., RECEIVED.

LAURIE, T. WERNER, London.
Round the World in Strange Company. By Nicholas Everitt, F.Z.S. Price 12*s.* 6*d.* net.

LIVINGSTONE, E. AND S., Edinburgh.
Text-book of Public Health (late Husband's). By E. W. Hope, M.D., D.Sc. Eighth edition. Revised and enlarged. Price 5*s.* net.

LONGMANS, GREEN, AND CO., London.
Molecular Association. By W. E. S. Turner, D.Sc. Lond., M.Sc. Birm. Price 5*s.* net.

MORGAN AND SCOTT, LIMITED.
The Gospel of Healing. By A. B. Simpson, D.D. Price 2*s.* net.

SAUNDERS, W. B., COMPANY, London.
Differential Diagnosis. Vol. I. Presented through an Analysis of 385 Cases. By Richard C. Cabot, M.D., Assistant Professor of Clinical Medicine, Harvard University Medical School. Third Edition. Revised. Vol. II. Presented through an Analysis of 317 Cases. Price, each, 24*s.* net.
A Laboratory Manual and Text-book of Embryology. By Chas. W. Prentiss, A.M., Ph.D., Professor of Microscopic Anatomy in the Northwestern University Medical School, Chicago. Price 17*s.* net.
Nervous and Mental Diseases. By Archibald Church, M.D., Professor of Nervous and Mental Diseases, Northwestern University; and Frederick Peterson, M.D. Price 21*s.* net.
A Text-book of Diseases of the Nose and Throat. By D. Braden Kyle, M.D., Professor of Laryngology, Jefferson Medical College, Philadelphia. Fifth edition. Price 20*s.* net.
The Principles of Hygiene. By D. H. Bergey, A.M., M.D., Assistant Professor of Bacteriology at the University of Pennsylvania. Fifth edition. Price 13*s.* net.

THE SCIENTIFIC PRESS, LIMITED, London.
Burdett's Hospitals and Charities, 1915. By Sir Henry Burdett, K.C.B., K.C.V.O. Price 10*s.* 6*d.* net.

WILSON, EFFINGHAM, London.
Practical Guide to the Death Duties and the Preparation of Death Duty Accounts. By Charles Beatty, Solicitor. Fifth edition, revised and enlarged. Price 4*s.* net.

A "LINEN LEAGUE."—At a meeting held at the South Devon and East Cornwall Hospital on April 9th, under the presidency of Sir Henry Lopes, it was decided to form a "linen league" in connexion with the institution. The league will supply linen, quilts, bed-clothing, &c., for the use of the patients. It is hoped that this will be the means of saving the hospital £200 per annum, which is the sum of money at present spent on these articles.

ROYAL MEDICAL BENEVOLENT FUND.—The following is a further summary of cases recently relieved by the Fund:—

Daughter, aged 49, of F.R.C.S. Eng. who practised at Biggleswade. Suffering from epilepsy and has a chronic gastric ulcer. Only income £21 per year from another charity. Relieved 16 times, £141. Voted £12 in 12 instalments.—Widow, aged 77, of M.D. Glasg. who practised at Bournemouth. Lives in own house, but daughter who is a musician and helped to keep the home unable to obtain engagements since the war, and two sons, artists, unable to help. Previous relief 11 times, £62. Voted £5 and recommended for an annuity.—Widow, aged 76, of M.R.C.S. Eng. who practised at Islington. Health bad and failing eyesight. Only income old age pension. One son, a commercial traveller, married, with family, unable to help. Relieved once, £18. Voted £18 in 12 instalments.—Widow, aged 57, of M.D. Edin. who practised at Wetheral. Tries to earn a little by taking boarders, but has not been successful of late. Suffering from chronic rheumatism. Only son abroad and only able to help slightly. Previous help 8 times, £96. Voted £12 in 12 instalments.—Widow, aged 67, of M.R.C.S. Eng. who practised in London. Suffering from malignant growth in left breast and quite unable to do anything. Five children, but only three of the daughters are able to help very slightly. Previous relief 16 times, £183. Voted £12 in two instalments.

Correspondence.

"Audi alteram partem."

CEREBRO-SPINAL MENINGITIS.

To the Editor of THE LANCET.

SIR,—In his interesting paper on meningococci in peripheral blood in THE LANCET of April 10th Dr. A. C. Coles asks if the discovery of the germ in blood films made from peripheral blood is a practical method of diagnosis, or are the meningococci only to be found in the septicæmic type of the disease?

Personally, I believe this to be the method of diagnosis which will shortly be widely adopted. I found the germ in 80 consecutive cases,[1] and found it more readily in this manner than from the throat, &c. In some cases I failed to grow any diplococcus from any source, including the cerebro-spinal fluid, though the patient died with typical symptoms, and blood films had shown diplococci during life, and films made from the cerebro-spinal fluid showed intracellular diplococci after death.

But we have to prove that the germ we find in peripheral blood films is the germ which causes the disease, for this is not yet admitted by all, particularly in slight cases. In blood the meningococci I have seen often have a capsule. I have not seen this fact mentioned. As Dr. Coles points out, there is a strong resemblance to the gonococcus, and recognising the possibility of mutation in this germ as in others, it would appear desirable that further investigations should at once be made. The presence of the gonococcus in the blood in sufficiently large numbers to be found in blood films is, to say the least, not a common event, and the symptoms of the two diseases are sufficiently unlike to make confusion between the two unlikely. The pneumococcus may be put out of court by the fact that it is strongly Gram-positive and the meningococci are not.

The micrococcus catarrhalis is not mentioned by Dr. W. d'Este Emery[1] as being found in the blood, so I think we may take it that it is not a frequent habitant. The diplococci which remain are the meningococci, and it will be interesting to ascertain the exact characters of the organism found, particularly whether the diplococci described by Weichselbaum, Jaeger, and others owe their differences to environmental conditions. But the first theorems needing proof are (1) diplococci are to be found in the peripheral blood in practically all cases, and (2) they are the same diplococci as those found in the meninges.

But I would wish to give one word of warning as the result of my own failures to grow the germ in some cases in which I found it in the blood. It is not easy to grow unless special care is taken, as is shown by the various reports already published, and it *is* commonly easy to detect in the blood. Hence it is important that this question of identity be settled as soon as possible, so that the simpler method of diagnosis may be utilised if it is shown to be adequate. Anyone who has frequently made cultures from blood will agree that a few drops are not enough. Even where the germ can be seen in blood films 2–5 c.c. are needed. Hence,

[1] Journal of Tropical Medicine, November, 1900.
[2] Clinical Bacteriology and Hæmatology, d'Este Emery, p. 158.

if mere examination of blood films is sufficient, it is important that we know the fact as soon as possible.

I am, Sir, yours faithfully,

Colwall, April 12th, 1915. MARY H. WILLIAMS.

To the Editor of THE LANCET.

SIR,—The very interesting report of a case of the above disease sent by Dr. Alfred C. Coles to THE LANCET of April 10th will, I hope, be followed by other reports where early blood examinations have been made. If the meningococci are to be generally found in the blood it will be useful for early diagnosis, especially for practitioners in the country who may not have, or be able to procure, the necessary instrument for lumbar puncture. In the case of the blood being found infected it will give us an opportunity to try the soamin treatment described by Dr. George Low in the *British Medical Journal* of Feb. 27th last, and also used by Mr. E. Norman Butler in British East Africa and described in THE LANCET of April 3rd.

In a case I had recently the symptoms tallied with those of Dr. A. D. Edwards's case as quoted by Dr. Coles—viz., intense pain in the lumbar region and vomiting and *no* head retraction—I notice the early symptoms of the African native cases were intense headache and head retraction. In my case meningococci were found after lumbar puncture, but blood was not examined. After consultation with Dr. Hyla Greves, of Bournemouth, soamin was tried and seemed to benefit the patient for a fortnight, but the case then got rapidly worse and Flexner's serum was used, though too late, as the patient died on the twentieth day after onset. I hope statistics will soon be published showing the mortality rate of the disease, where serum has been used and where not.

I am, Sir, yours faithfully,

Christchurch, Hants, April 11th, 1915. W. MOSS BRISTOW.

ANGINA PECTORIS.

To the Editor of THE LANCET.

SIR,—I am much interested in the letter of Dr. Edgar Lea on a case of angina pectoris, in your issue of April 10th. The case was one of syphilitic aortitis with angina, and needs no particular "segmental" or other "neurosis" to explain it. Dr. Lea's able letter gives precisely the data wanted in such cases. But I wish to thank him especially for his careful observations concerning tender points. Their physiological interest is great, but, like Dr. Lea, I have found them too fugitive and inconstant for clinical use; and this opinion I have diffidently ventured to state already in my book on arterial disease, which now—after long delays due to the war—will, I trust, soon be published.

I am, Sir, yours faithfully,

Cambridge, April 10th, 1915. CLIFFORD ALLBUTT.

HEALTH RESORTS FOR CONVALESCENCE AND SICK LEAVE IN THE ARMY.

To the Editor of THE LANCET.

SIR,—You have described in a leading article in the last issue of THE LANCET with unanswerable force the hiatus that begins after hospital treatment, and ends either in restoration to health or in chronic disability. It is to be feared that this period of convalescence is often unnecessarily painful and prolonged, and that, indeed, it frequently fails of its effects for want of continued medical care and supervision. Many of the excellent convalescent homes abundantly provide for an uncomplicated recovery, but, as you suggest, there are a very large number of cases in which a continuance of special care and treatment is needful.

Experience has shown that spas and other health resorts are the proper places for these cases. The treatment at health resorts of military cases has been amply justified already in this country, although, happily, on a comparatively small scale. We need only refer to such common conditions as painful wounds, post-operative cases, nervous disorders from shock and injury, rheumatism, tachycardia, &c. For the very large numbers now in contemplation special arrangements are of course requisite, but there is no lack of willing service at the health resorts, and all their resources are freely offered for wounded and invalid soldiers.

A committee of the Council of the Section of Balneology and Climatology of the Royal Society of Medicine has been engaged in collating the necessary information and supplying it to the military authorities. They have prepared a short pamphlet which includes: (1) a summary of the medical and surgical maladies most commonly met with in the military hospitals, for which spa treatment at a health resort is indicated; and (2) a list of the British spas, as well as other bathing establishments, with the factors influencing the preference for one or another in the treatment of such maladies.

It is the aim of the committee in association with local committees and representatives throughout the country to fill the hiatus to which you have referred by organising a scientific after-treatment at our many valuable health stations. They also have in hand a proposal for furnishing to the War Office returns of the accommodation available, both for men and officers.

The practical carrying out of such a work on a large scale naturally presents some difficulties. To one of these you refer. Medical men, without, at all events, temporary military rank, are often at a loss when in charge of military cases. There is also the larger difficulty how to provide an efficient and scientific distribution of the large numbers of cases leaving the great hospitals, so that each man may be sent to the locality where he will receive the greatest benefit. These and other problems present, however, no insuperable difficulties. They are mainly questions of machinery. The great and encouraging fact is the willingness of all concerned to do their part.

We are, Sir, yours faithfully,

R. FORTESCUE FOX,

April 11th, 1915. J. CAMPBELL MCCLURE.

"THE MINOR HORRORS OF WAR."

To the Editor of THE LANCET.

SIR,—Although the first edition of my little book on the above subject was a large one, a second edition is already being called for.

As I am anxious to make the book as useful as possible, I should be grateful if any medical man who has had actual experience in dealing with *Pediculus vestimenti* and *Pediculus capitis*, and who knows of remedies other than those mentioned in the first edition, would communicate with me at the address given below.

I am, Sir, yours faithfully,

A. E. SHIPLEY.

Christ's College Lodge, Cambridge, April 12th, 1915.

PROBATIONERS AND WAR HOSPITALS.

To the Editor of THE LANCET.

SIR,—I beg to suggest that all probationers having had three months' ward training in the general hospitals be allowed to serve for three or six months in the military hospitals, such time counting as part of the three or the four years' training, as the case may be. The universities and examining boards allow students holding dresserships in the military hospitals to count the time as part of their clinical instruction. The adoption of the above suggestion with regard to nurses brings the two branches of the profession into line, and while the service would prove of great advantage to the sick and wounded, the experience gained by the probationers must add to their future efficiency.

I am, Sir, yours faithfully,

April 12th, 1915. SURGEON.

THE DEARTH OF DOCTORS.

To the Editor of THE LANCET.

SIR,—Dr. William Bruce's letter in your issue of to-day's date is very difficult to understand. Men with four years' training at the hospitals at present have been brought up on a system that would render them very inefficient practitioners if qualified out of hand. Their curriculum, as in the old days, is not devised for it. They would in some cases be a source of grave danger. Nobody should know this better than a one-time member of the General Medical Council. Again, if we *de novo* revert to the old four years' system from this on we may get a large crop, but, I fear, very many tares. Medical science has advanced too far for even the elements to be learned by the average man in five years. After a good training as house surgeon or the like, he may have a working knowledge but no more. Now why revert to a four years' course when the war cannot last so long? Men are being qualified fairly rapidly; thousands of other men are abroad, and very many thousands fit and well at home. Most of these will be ready for work when the war is over. The plan outlined in your leading article seems not only the best but the sole plan that can meet the situation.

I am, Sir, yours faithfully,

April 10th, 1915. X. Y. Z.

To the Editor of THE LANCET.

SIR,—With regard to the letter by Dr. W. Bruce on this subject in THE LANCET of April 10th, may I point out how in one or two directions the shortage of doctors for the army might be relieved? 1. A certain number of qualified men are serving as combatants; they should be transferred to the Royal Army Medical Corps. 2. The Reserve Corps of Territorials, and those units who have not volunteered for service abroad, absorb a considerable number of men whose time is by no means fully occupied, and whose duties could be easily undertaken by part-time civilians. 3. The services of a number of experienced men, who are not too old at 40 or even 50, could be obtained to do the work at base hospitals either in France or at home, setting free a corresponding number of younger men for service in the field.

In this, as in so many other directions, we are hampered by the absence of compulsory military service by which every man could be made to do the national work for which he was most fitted.

I am, Sir, yours faithfully,

TEMPORARY LIEUTENANT, R.A.M.C. (T.).

April 12th, 1915.

Obituary.

PROFESSOR FRIEDRICH LOEFFLER.

THE death is announced of Professor Friedrich Loeffler, the eminent bacteriologist. He was born at Frankfort-on-the-Oder in 1852, and was educated in the Universities of Würzburg and Berlin. In 1888 he was appointed professor and director of the Hygienic Institute at the University of Greifswald, and in 1895 he was elected a member of the Imperial Institute, when, in conjunction with Koch and Gaffky, he pursued some investigations in regard to disinfection by means of steam.

His researches carried him into various paths of bacteriology, but it was in reference to the causal organism of diphtheria that he was best known. Klebs in 1883 had described a bacillus which he had observed in diphtheritic membranes, but Loeffler was the first who succeeded in cultivating it in artificial media, and in producing in animals by means of inoculations distinct lesions which resembled diphtheria. He had made a careful study of the use of aniline dyes in staining bacteria. The solution known as "Loeffler's methylene blue" is largely employed, and is particularly suitable for the demonstration of the diphtheria bacillus, as it brings out well the metachromatism of the granules in the bacilli. His researches in diphtheria as occurring in animals and birds were also valuable. He succeeded in producing membranous inflammation in guinea-pigs by vigorously inoculating the vaginal mucosa, and in rabbits by treating the conjunctiva or tracheal mucous membrane in a similar manner. He further investigated the disease as occurring in calves and pigeons. Amongst other morbid conditions which he investigated may be mentioned the "red murrain" of pigs, which until then had been classed with swine fever.

Professor Loeffler as a pioneer will be placed amongst the foremost of German scientists. The results of his researches, both directly and indirectly, as leading up to the work of other observers (as, for instance, the introduction of the antitoxin treatment of diphtheria), have proved of the highest value to mankind, whilst the manner in which his investigations were conducted has formed a firm and instructive basis for other bacteriologists.

HENRY LEWIS JONES, M.D. CANTAB., F.R.C.P. LOND.,

CONSULTING MEDICAL OFFICER TO THE ELECTRICAL DEPARTMENT AT ST. BARTHOLOMEW'S HOSPITAL.

WE announced last week the death of Dr. Henry Lewis Jones, consulting medical officer to the electrical department at St. Bartholomew's Hospital, which took place on April 4th, at his residence in Harley-street. He had for a long period been in bad health. The disease to which he ultimately succumbed was at first very obscure in its manifestations, and an operation performed nearly two years ago was for a time successful, so that until September of last year he was able to carry on his extensive practice. But it was recognised that the improvement might be only temporary, and the death of his only son, who went down in H.M.S. *Hawke*, proved a shock from which he never really rallied. From that day he steadily lost ground, and the end was expected.

Henry Lewis Jones, who was born in 1857, the son of a naval chaplain, was educated at Shrewsbury School and Caius College, Cambridge, which college he entered in 1876 as a senior science scholar. He graduated with honours in the Natural Science Tripos and found time also to stroke with success one of his college boats at a time when Caius rowing was particularly good. From Cambridge he went to St. Bartholomew's Hospital, where, having held all the usual appointments, he particularly devoted his attention to the use of electricity in medicine, a branch of therapeutics which 30 years ago was only threatening the position which it has since reached. He was elected physician in charge of the electrical department at St. Bartholomew's Hospital, and throughout his association with that hospital he proved himself the effective pioneer of his subject in this country. He was thoroughly practical as well as really learned, he had the power of explaining himself, and was quick to encourage ability in others. He could teach verbally, and write clearly. His book on "Medical Electricity," which is now in its sixth edition, fully deserves the success which it has attained, while his more recent small work on ionic medication was the first attempt to explain to the medical profession generally the principles of the method, and to give an account of the clinical results to be derived from its employment. The writings of Lewis Jones, in fact, have done more than any others to give medical electricity the position which it now holds in this country, and it was largely due to him that ionic medication made strides in professional favour. In his treatises he avoided theoretical discussions as far as possible, while the clinical records which accompanied the work on ionic medication were nearly all concerned with lesions of a superficial character; and this was characteristic of the author's thoroughness and honesty. He was determined not to exploit a good thing by using it wrongly, and to lead no one else into mistaken enthusiasm; indeed, he protested against the way in which, for example, subjects of polyarticular arthritis have been subjected often by unqualified persons to so-called ionic medication. His position was recognised by Government, who asked him to act as official delegate at the International Congress of Physiotherapy at Liége in 1905, and at a similar Congress in Paris five years later, while in 1913 he was President of the British Electro-Therapeutic Society.

Henry Lewis Jones was scientific to his fingertips and absolutely practical. He was extremely shrewd in his judgments, but quite broad-minded in his attitudes. He was very hard-working, but found time to enjoy life. In him we have lost one of the best type of practising physicians, and many personal friends will regret him.

He married in 1896 the eldest daughter of Count H. H. Platen-Hallermund, by whom he had one son, whose sad death has been mentioned.

WILLIAM ARTHUR BRAILEY, M.A., M.D. CANTAB.,

CONSULTING OPHTHALMIC SURGEON TO GUY'S HOSPITAL.

WE regret to announce the death of Dr. William Arthur Brailey, the well-known ophthalmologist, which occurred on April 8th, in his seventieth year, at 11, Old Burlington-street, W.

Dr. Brailey was born at Uttoxeter in 1845, the only boy in a family of seven. He was educated at Woodhouse Grove School and passed the London matriculation at the age of 16 years with first-class honours. He entered at Guy's Hospital, but his health proving unequal to the work, he migrated to Cambridge, where his father, the Rev. William Brailey, a Wesleyan minister, then resided. His health improving, young Brailey was fortunate enough to obtain an open scholarship at Downing College. In 1866 he took the B.A. London with the exhibition in biology, and in 1867 was in the first class in the Cambridge Natural Science Tripos. A few years later (1871) he graduated in medicine at Cambridge, and in the same year was elected a Fellow of Downing College. He soon returned to Guy's Hospital, but in October, 1873, married and went into general practice. After something less than a year's general practice at Witham, Essex, Brailey returned to London and took up work at the Moorfields Eye Hospital, where he formed a friendship with Sir William Bowman, which ended only with the latter's death. He became registrar and curator at the Moorfields Hospital, and was also appointed lecturer on comparative anatomy at Guy's Hospital. At a somewhat later period, when Mr. Bader relinquished the ophthalmic surgeoncy at Guy's Hospital, he was succeeded by Mr. Charles Higgens, and Dr. Brailey was appointed assistant ophthalmic surgeon. That appointment he held for many years, until, indeed, the statutory age of 60, when he was appointed consulting ophthalmic surgeon to the hospital.

Dr. Brailey was Hunterian professor at the Royal College of Surgeons of England in 1885–86. He took a very prominent part, with Bowman, Hutchinson, Nettleship, and others, in founding the Ophthalmological Society in 1880, and at various times since filled the several offices of vice-president, secretary, and councillor. During the earlier part of its existence he made many notable contributions to its Transactions. In 1890 he was awarded (jointly) the Middlemore prize of the British Medical Association, and later he received the welcome distinction of an honorary Fellowship at his old college.

Dr. Brailey leaves a widow, Agnes, daughter of Mr. John Robertson, and two sons, both members of the medical profession, who are serving their country, one in the navy and the other in the army.

The funeral took place at Warbleton.

BRISTOL EYE DISPENSARY.—At the annual meeting of this dispensary held recently the medical and financial reports were found to be satisfactory. The committee stated that Mr. E. H. E. Stack, who relinquished the surgeoncy of the Eye Dispensary when he was made full surgeon at the Bristol Royal Infirmary, had been re-elected surgeon to the Eye Dispensary, his position of ophthalmic surgeon at the infirmary allowing him to take both appointments.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE SOCIETY.—The thirty-second annual meeting of this society was held at the offices in High Holborn, London, W.C., on March 30th. The President, Dr. F. de Havilland Hall, having declared the chairman, vice-chairman, and treasurers re-elected, called on Dr. F. J. Allan to preside. Dr. Allan declared the remaining members of the committee duly elected. The chairman announced that over 300 members of the society were serving in the various forces of the country. The society had had a very successful year. There had been 276 new proposals, and the total membership at the end of the year was 3255. The gross premiums received in the Sickness Fund amounted to £24,190, while £15,931 had been paid in claims. The funds now exceeded £266,500. After some discussion the report and audited accounts were unanimously adopted.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

THE Fund continues to receive solid support. A letter which has reached the treasurer from Dr. D. Colquhoun, of Dunedin, explains an anonymous contribution of £300 whose receipt was announced on Feb. 27th. The sum was subscribed by doctors, chemists, nurses, and the public of Otago, New Zealand, and was received by the Fund in response to a cable to Lloyds Bank. Such support from New Zealand is particularly gratifying, while we learn from Dr. Colquhoun's letter that he hopes to add further to this handsome contribution, as subscriptions are still coming in to him.

THE WEEK'S SUBSCRIPTIONS.

The subscriptions received by Dr. Des Vœux up to Tuesday evening last, in addition to those previously acknowledged, and not including money collected by the Scottish and Irish Funds, are as follows:—

	£	s.	d.
Birmingham Local Committee (per Dr. Robt. Saundby, Hon. Sec.) (fourteenth donation, total £375 10s. 3d.)—			
"A Friend"	10	0	0
Dr. T. and Mrs. Halford Wilkins, proceeds of Whist Party	10	10	0
Dr. C. S. Rigby	5	0	0
Dr. Waddell	5	0	0
Dr. Walter Allen... ...	5	0	0
Dr. Oswald R. Lewis...	1	1	0
Mr. J. P. Ellerington (La Pharmacie Française) (sixth donation, total £45)	5	0	0
Rotherham Division, B.M.A. (per Dr. Knight, Hon. Sec.)—			
Dr. Ling	1	1	0
Southern Branch, B.M.A. (per Dr. Jas. Green, Hon. Sec.)—			
Dr. J. Lister Wright...	1	1	0
Dr. W. J. Jolliffe ...	1	1	0
Dr. E. W. Simmons ...	2	2	0
Dr. F. W. H. Robson	0	10	6
Dr. M. Treston	1	1	0
Dr. A. Kennedy	0	10	6
Dr. J. H. Pridham ...	0	5	0
Dr. J. Davidson Wyness	1	1	0
Dr. J. Fletcher	0	10	0
Dr. Annie M. Black ...	1	0	0
Dr. T. L. Kennish	1	1	0
Dr. Charles H. East ...	2	2	0
South Eastern Counties (Scotland) Division, Edinburgh Branch, B.M.A. (per Dr. M. J. Oliver, Hon. Sec.) (2nd donation, total £51 5s.)			
Collected by Dr. G. Gunn Bannerman; Hawick—			
Dr. Barrie	2	2	0
Dr. S. G. Davidson ...	2	2	0
Dr. Dixon	2	2	0
Dr. Bannerman	2	2	0
Mr. D. C. Michie ...	2	2	0
Mr. Geo. Cairns	1	1	0
Mr. W. E. Wilson ...	1	1	0
Mr. G. P. Ross	1	1	0
Mr. W. J. Kearney ...	1	1	0
Mr. John P. Scott ...	1	1	0
Dr. Evans (second donation)	2	2	0
Collected by Hon. Sec.—			
Dr. Cullen	1	1	0
Dr. McInnes	0	10	0
Bournemouth Division, B.M.A. (per Dr. Eleanor C. Bond, Hon. Sec.) (total £99 2s. 6d.)—			
Dr. C. B. Mooring Aldridge	1	0	0
Dr. W. Alexander ...	2	2	0
Dr. G. H. Batterbury	1	1	0
Miss Bond, M.D. (second donation) ...	2	2	0
Dr. F. C. Bottomley...	5	0	0
Dr. R. T. Bowden ...	1	1	0
Dr. F. J. Burge	0	10	6
Dr. A. E. Carsbery ...	1	1	0
Dr. T. Compton	1	1	0
Dr. A. H. Davis	1	1	0
Dr. H. Dobell	1	0	0
Dr. P. Duncan	10	10	0
Dr. F. Fowler	5	0	0
Dr. and Mrs. W. Gosse	1	1	0
Dr. G. S. Halton... ...	1	1	0
Dr. A. Lattey	2	2	0
Dr. E. K. Le Fleming	1	1	0
Dr. N. McGillicuddy	1	1	0
Dr. E. E. Maddox ...	1	1	0
Dr. T. Martland	1	1	0
Dr. S. Montgomery ...	1	0	0
Dr. C. D. Muspratt (second donation) ...	3	3	0
Dr. C. W. Parkinson...	1	1	0
Dr. S. Powell	2	2	0
Dr. H. T. Pringle ...	2	2	0
Dr. F. Winson Ramsay	10	10	0
Dr. T. Richardson ...	1	1	0
Dr. B. Shillitoe	3	3	0
Dr. H. Simmons ...	10	10	0
Dr. Telford Smith ...	1	1	0
Dr. Johnson Smyth ...	0	10	0
Dr. A. de W. Snowden	10	0	0
Dr. C. Thomson	1	1	0
Dr. Roberts Thomson	10	0	0
Dr. Medley Wood ...	1	1	0
Dr. G. D. H. Carpenter	1	0	0
Capt., Uganda Medical Service (will subscribe £1 monthly)...	1	0	0
Dr. T. W. Locket	1	1	0
Dr. William Angus ...	1	1	0
"E. B. H."	1	1	0
Manchester and District Subcommittee (Supplementary) (per Dr. Brockbank, Hon. Sec.) (total £583 0s. 5d.)—			
Dr. Craven Moore ...	5	5	0
Dr. Dowzer	1	1	0
Mr. C. E. Hecht... ...	0	5	0
North of England Branch (per Dr. James Don and Mr. A. S. Perceval, Hon. Secs.) (seventh donation, total £333 3s.)—			
Dr. W. W. Williams ...	1	1	0
Dr. F. C. Pridham ...	1	1	0
Dr. Lillie Johnson ...	1	1	0
Dr. J. J. Archbold ...	1	1	0
Dr. H. Baigent	2	2	0
Dr. H. K. Wallace ...	1	1	0
Anonymous	2	2	0
Canterbury and Faversham Division, B.M.A. (per Dr. Neil Robson, Hon. Sec.) (third donation)—			
Dr. E. A. McAnally ...	1	1	0
Dr. W. P. Dickson ...	1	1	0
Queensland Section of the Australasian Pharmaceutical Conference (per Agent-General)	100	0	0
Mr. H. A. Watkinson ...	0	10	6
Hull Pharmaceutical Association, collected by the (per Mr. T. W. Robinson)—			
Mr. W. Staning	1	1	0
Mr. B. M. Stoakes ...	0	10	6
Messrs. Lofthouse and Saltmer	5	5	0
Mr. R. B. Sawyer ...	0	10	6
Mr. A. P. Metcalfe ...	0	10	0
Mr. E. H. Earle	1	1	0
Mr. T. H. Newton ...	0	10	6
Mr. J. J. Spilman ...	1	1	0
Mr. C. Brameld	0	10	6
Messrs. Selle and Idon	1	1	0
Mr. T. Smith	1	1	0
Messrs. Smith and Nephew	2	2	0
Mr. A. Richardson ...	1	1	0
Mr. E. Fowler	0	5	0
Mr. W. H. Walton ...	0	10	6
Mr. J. F. Robson ...	1	1	0
Mr. J. W. Podmore ...	0	10	6
Mr. T. H. Good	0	5	0
Mr. H. Leggott	0	10	0
Mr. J. Tiffany	0	5	0
Mr. A. T. Thirsk ...	0	5	0
Mr. A. J. Wharton ...	0	10	6
Mr. Chapman	1	1	0
Mr. A. Bennett	0	10	0
Mr. W. H. Buck ...	0	10	6
Mr. F. L. Smith	1	1	0
Mr. E. C. Foster ...	0	5	0
Mr. L. B. King	0	5	0
Mr. T. W. Cockrill ...	0	5	0
Mr. Walls	0	5	0
Mr. J. T. Lincoln ...	0	10	6
Mr. T. W. Agar	0	5	0
Mr. A. Howe	0	5	0
M. Zebb...	0	5	0
Mr. S. Heath	0	7	6
Mr. G. Hoyles	0	10	0
Mr. A. D. Markham...	0	5	0
Mr. J. R. Foster... ...	0	5	0
Mr. C. D. Brighouse...	0	7	6
Mr. Jackson...	0	10	0
Mr. Jones	0	10	6
Mr. J. E. S. Studdaby	0	10	6
Mr. T. W. Robinson ...	1	1	0
Mr. Schofield	0	5	0
Mr. G. A. Hebblethwaite	0	5	0
Mr. G. R. Newton ...	0	5	0
Mr. E. Ryley	0	2	6
Mr. J. S. Sayers... ...	1	1	0
Mr. F. Kirkus	0	2	6
Mr. Kenny	0	5	0
Mr. E. S. Perkins ...	0	7	6
Hull Pharmacists' Association Funds ..	5	0	0
Sheffield Pharmaceutical and Chemical Society, collected by (per Mr. S. Furnival) (second donation)—			
Mr. J. Gilbert Jackson	1	1	0
Mr. F. G. Roebuck ...	0	10	0
Mr. E. C. Knowles ...	0	7	6
Mr. E. S. Seaborne ...	0	5	0
Mr. J. H. Meadowcroft	0	5	0
Mr. J. W. Lofthouse...	0	5	0
Mr. T. Miner	0	10	6
Mr. J. S. Oswald ...	0	10	0
Mr. T. Cockshot... ...	0	2	6
Mr. J. B. Whitby ...	0	2	6
Mr. J. E. Alcock... ...	0	2	6
Messrs. J. P. Hewitt and Son	0	2	6
Mr. T. W. Hodges ...	0	2	6
Mr. J. T. Appleton ...	0	5	0
Mr. J. Dale	0	5	0
Mr. J. A. Johnson ...	0	5	0
Mr. G. K. Robinson ...	0	2	6
Mr. G. Robinson ...	0	2	6
Mr. J. Chadwick... ...	0	2	6
Mr. E. H. Swift	1	1	0
Mr. S. Eyre	0	2	6
Mr. H. Williams... ...	0	2	6
Mr. F. H. Fox	0	2	6
Mr. J. H. Wright ...	0	5	0
Mr. W. B. Stather ...	0	5	0
Mr. E. A. Craven ...	0	2	6
Messrs. G. T. W. Newsholme, Ltd.	2	2	0
Mr. J. Preston	2	2	0
Mr. W. E. Heaton ...	0	10	6
Mr. G. Squire	1	1	0
Mr. J. Evans, F.I.C....	0	10	6
Mr. J. C. Gibson... ...	0	5	0
Mr. H. B. Hammond...	0	5	0
Messrs. Smith and Gill	0	10	0
Mr. H. Bown	0	5	0
Mr. R. Dixon	0	10	0
Mr. B. Ellis	0	10	0
Mr. J. H. Bradwell ...	0	2	6
Mr. W. P. Arnott ...	0	2	6
Mr. Walton	0	2	6
Mr. A. H. Culverhouse	0	5	0
Mr. J. F. Eardley ...	1	1	0
Mr. S. Furnival	0	10	0
Mr. J. F. Simon	0	5	0
Mr. J. S. Burnell ...	0	2	6
Mr. W. S. Campbell ...	0	2	6
Mr. J. B. Pater	0	2	6
Mr. L. B. Henderson	0	5	0
Mr. A. R. Powell ...	0	5	0
Mr. J. H. Holton ...	0	2	6
Mr. H. Antcliffe... ...	0	5	0
Mr. H. G. Williams ...	1	1	0
Mr. S. Lowe	1	1	0
Mr. R. H. Field	0	1	0
Mr. H. T. Watt	0	2	6
Mr. S. Paddon	0	5	0
Mr. E. G. Douthwaite	0	5	0
Mr. G. R. Airey	0	5	0
St. John Ambulance Association Indian Council (per Major R. J. Blackham, C.I.E.)	25	0	0
Mr. Cedric Chivers (per Mr. J. Y. W. MacAlister), Brooklyn, N.Y.	25	0	0
Captain R. D. MacGregor, I.M.S. ...	5	0	0
Dr. Craven Moore... ...	5	5	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Ltd. £10,012 had passed into the treasurer's hands by Tuesday last, the sum not including the Scottish and Irish Funds.

THE APPEAL FOR SURGICAL INSTRUMENTS.

The Master of the Society of Apothecaries begs to acknowledge the receipt of surgical instruments kindly contributed by Professor Shennan, Aberdeen University; Mr. Horatio P. Symonds, Oxford (per Professor Thomson); Anonymous, Bristol; and Dr. Daniel, Hull (per the Voluntary Aid Committee).

THE UNIVERSITY CHAIR OF PHYSIOLOGY AT ST. BARTHOLOMEW'S HOSPITAL MEDICAL SCHOOL.

—Applications for this chair must be received by the academic registrar, University of London, South Kensington, S.W., not later than the first post on May 3rd. Twelve copies of the application must be sent together with the names of not more than three references, but testimonials are not required. The salary is £600 a year.

The War.

THE BATTLE OF NEUVE CHAPELLE: SIR JOHN FRENCH'S DISPATCH.

Sir John French's dispatch, dated April 5th, which was brought to London by H.R.H. the Prince of Wales, contains a warm commendation of the work of the Royal Army Medical Corps and of the Army Medical Service. The following extract from the dispatch will be read with gratification by all members of the medical profession:—

Health of the Army.

Since the date of my last report the general health of the army has been excellent; enteric has decreased, and there has been no recurrence on any appreciable scale of the "foot" trouble which appeared so threatening in December and January. These results are due to the skill and energy which have characterised in a marked degree the work of the Royal Army Medical Corps throughout the campaign, under the able supervision of Surgeon-General T. J. O'Donnell, D.S.O., Deputy Director-General, Medical Services. But much credit is also due to divisional, brigade, regimental, and company commanders for the close supervision which has been kept over the health of their men by seeing that the precautions laid down for the troops before entering and after leaving the trenches are duly observed, and by the establishment and efficient maintenance of bathing-places and washhouses, and by the ingenious means universally employed throughout the forces to maintain the cleanliness of the men, having regard both to their bodies and their clothing. I have inspected most of these houses and establishments and consider them models of careful organisation and supervision. I would particularly comment upon the energy displayed by the Royal Army Medical Corps in the scientific efforts they have made to discover and check disease in its earliest stages by a system of experimental research, which I think has never before been so fully developed in the field. In this work they have been ably assisted by those distinguished members of the medical profession who are now employed as military medical officers, and whose invaluable services I gratefully acknowledge. The actual strength of the force in the field has been increased, and the health of the troops improved by a system of "convalescent" hospitals. In these establishments slight wounds and minor ailments are treated, and men requiring attention and rest are received. By these means efficient soldiers, whose services would otherwise be lost for a long time, are kept in the country, whilst a large number of men are given immediate relief and rest when they require it without removing them from the area of operations. This adds materially to the fighting efficiency of the Forces.

Army Medical Service and Hospitals.

The principal convalescent hospital is at St. Omer. It was started and organised by Colonel A. F. L. Bate, Army Medical Service, whose zeal, energy, and organising power have rendered it a model hospital of its kind, and this example has materially assisted in the efficient organisation of similar smaller establishments at every Divisional Headquarters.

I have already commented upon the number and severity of the casualties in action which have occurred in the period under report. Here once again I have to draw attention to the excellent work done by Surgeon-General O'Donnell and his officers. No organisation could excel the efficiency of the arrangements—whether in regard to time, space, care and comfort, or transport—which are made for the speedy evacuation of the wounded.

THE WAR AND MEDICAL RECIPROCITY WITH CANADA.

Since the meeting of the Executive Committee of the General Medical Council of Feb. 22nd, 1915, it has been learnt unofficially that a Bill to Amend the Ontario Medical Act and to provide for the registration in Ontario of Medical Practitioners qualified in the United Kingdom has been introduced in the Provincial Legislature by the Attorney-General. The progress of the measure has not yet been announced. Movements towards the establishment of reciprocity have also been taken by other Provinces. On March 24th, 1915, a cable was received from the College of Physicians and Surgeons of the Province of British Columbia stating that their Medical Council had passed a resolution authorising reciprocal arrangements with the United Kingdom. This was confirmed in a letter written on the next day by their Registrar, in which the following phrases show how exactly the situation is being understood in the Dominion:—

It has been felt for some time that in view of the present conditions, brought on largely by the war, there ought to be reciprocity between this country and Great Britain in order that there may be no question as to the standing of our men serving in Britain or on the continent. It was felt, further, that this was a very fitting time, when every part of the empire is trying to do its best to assist, to bring this matter to a conclusion, and our desire was accordingly cabled to you. It will, of course, be necessary to pass an amendment to our Medical Act. I saw the Attorney General of this Province last night, and he gave me the assurance of his Government that this would be done."

Further, on April 4th, 1915, a cable was received by the General Medical Council from the Registrar of the College of Physicians and Surgeons of the Province of Saskatchewan stating that their Medical Council desired reciprocity, and requesting the General Medical Council of Great Britain to outline procedure. This was at once done, and the much-desired medical reciprocity between Canada and the United Kingdom is now approaching accomplishment, owing to the activity of the General Medical Council and the patriotic sense of Canada.

THE CASUALTY LIST.

Captain D. M. C. Church, I.M.S., is reported as having been wounded in the recent fighting with the Turks in Mesopotamia.

THE COÖPERATION OF CIVIL AND MILITARY AUTHORITIES IN SANITARY MATTERS.

A circular upon this important subject, issued by the Local Government Board this week to county councils, sanitary authorities, port sanitary authorities, and medical officers of health, begins by publishing the gratifying letter from the Assistant Secretary of the Army Council to the Local Government Board which will be found on p. 819 of this issue of THE LANCET.

The circular of the Board cordially endorses the expression of appreciation of the Army Council, and hopes that the assistance which has been rendered will be continued and extended, as "changes in the number or personnel of troops in the area will frequently call for immediate reconsideration or modification of existing arrangements."

The Board take the opportunity of this circular to refer to matters which, in their opinion, it is desirable that local authorities and their officers should give special attention to. The circular runs as follows:—

District councils and district medical officers of health.—Attention is particularly drawn to paragraph (1) on the second page of the Board's Circular (No. 1) as to the duty of district medical officers of health to inquire for and bring at once to the notice of the sanitary authority any conditions in which sanitary services can be rendered by the authority to the military population, and also to the importance of prompt action by the authority on receipt of such reports.

In respect of charges for such services the Board would again insist on the necessity that no urgent sanitary work should be postponed for consideration of the items which may be the subject of charges to the military authorities. For the guidance of sanitary authorities they have included among the appended documents a letter from the Army Council of 31st October, 1914 (No. 3), as to the principles of payment from army funds of charges by local authorities for increased expenditure on sanitary services rendered to troops. The question of payment for professional services of medical officers of health, inspectors of nuisances, &c., is referred to in paragraph 6 (*b*) of that letter. In this instance also the Board consider that the Council should not, pending the adjustment of any application which they may make for reimbursement from army funds, delay the payment to these officers of such sums as may be necessary to recoup them for additional time or special expenses of travelling incurred in the inspections and inquiries, which are essential if the desired coöperation is to be effectively established and continued. The Board will be glad to advise the Council in any case of difficulty arising in these matters.

The attention of district medical officers of health is then directed to the following:—

County councils and county medical officers of health.—The Board and the Army Council attach much importance to the work which has already been done by county medical officers of health in assisting the military authorities in the provision or "pooling" of isolation hospital accommodation, or of arrangements for disinfection within the county, the investigation of infectious disease, the protection of water-supplies, and like matters, and they are desirous that this work should be continued and amplified. With this object the county medical officer of health should obtain from the district medical officer of health each week information (*a*) of the occurrence of any military cases of infectious disease which have come to his knowledge in the district, and (*b*) of any new movements of troops into or out of the district which are known to him. District medical officers of health should give to the county officer any information as to the camps or billeted troops which will assist the latter officer to determine where his assistance may be most needed, and where visits of inspection by him are desirable. It is important that the county medical of health should visit (wherever practicable in conjunction with or after communication with the district medical officer of health) any large camps or important billeting centres. The Board would be glad to receive copies, at the time they are made, of any representations which the county medical officer of health considers it necessary to make, separately or jointly with the district medical officer of health, to the military authorities (No. 1, p. 10), or to sanitary authorities in the county.

Arrangements for bacteriological examinations of contact cases of cerebro-spinal meningitis.—In connexion with the prevalence of cerebro-spinal meningitis in the civil population, some councils, on the advice of their medical officer of health, have already made arrangements for the visits of a bacteriologist to any affected area, and for laboratory examination of material obtained from the contacts of cases of cerebro-spinal meningitis. The Board consider this action of much utility at the present time, alike in the interests of the civil and of the military population, and they trust that it will be actively pursued and extended wherever necessary. Corresponding arrangements have been made by the Army Council for military cases.

The circular proper closes by intimating a similar coöperation to that existing between the Local Government Board and the Army Council, between the Board and the Lords Commissioners of the Admiralty.

Appended to it, with the consent of the Army Council and the Home Office, are extracts from official documents which may be of use to local authorities in the circumstances. This appendix contains:—

(1) Reprint of Local Government Board Circular, Oct. 21st, 1914 (general system of coöperation); (2) letter from Army Council to General Officers Commanding, Oct. 10th, 1914 (general system of coöperation); (3) letter from Army Council to General Officers Commanding, Oct. 31st, 1914 (payment of charges for sanitary services); (4) Local Government Board Memorandum to Army Council, Dec. 1st, 1914 (as to some results of inspection; circulated by the Army Council); (5) extracts from "Rules as to Billeting" (issued with Army Orders, Dec. 1st, 1914); (6) letter from Home Office to Chief Constables, March 6th, 1915 (as to importance of observing Rule 21 as to billeting); (7) letter from Army Council to General Officers Commanding, Oct. 18th, 1914 (payment for military cases in isolation hospitals); (8) letter from Army Council to General Officers Commanding, Dec. 23rd, 1914 (additions to isolation hospitals); (9) letter from Army Council to General Officers Commanding, Oct. 1st, 1914 (inspection of food); (10) letter from Army Council to General Officers Commanding, March 3rd, 1915 (as to means for reducing overcrowding in huts and billets).

The first of these reprints recapitulates a circular letter issued by the Local Government Board on August 31st,[1] which, in setting out the lines of action on which medical officers of health should coöperate with the military sanitary services, comprised the following points:—

(1) That each medical officer of health should place himself in communication with the local military authorities offering his services; (2) that each medical officer of health should give information and assistance to military sanitary officers as to water-supplies, disposal of refuse, drainage and conservancy arrangements, control of infectious disease, &c.; (3) that the assistance of the sanitary inspector should be secured; (4) a system of inter-notification of infectious diseases, both by military and civil sanitary officers, was arranged; (5) the value of antityphoid inoculation was indicated; (6) the probable need for increased hospital accommodation for small-pox and enteric fever was emphasised; (7) the services of the medical staff of the Board were offered to medical officers of health for consultation, and local visits by medical inspectors were announced.

The circular letter adds that the officers concerned acted promptly upon that letter, and after recapitulating the prescribed duties of the medical officers of health, proceeds to indicate that the duties of the district medical officer of health of a sanitary district in which troops are quartered should include:—

1. Inquiring for and bringing to the notice of the sanitary authority any conditions in which sanitary services can be rendered by them to the military population—e.g., by extending water mains, opening or extending sewers, providing latrines or baths, providing hospital accommodation for cases of infectious disease, disinfecting clothing and blankets, destruction of refuse, making special arrangements for scavenging. Reports on these matters should be dealt with as urgent, and special meetings of the local authority should be called to consider them if necessary. Copies of all such reports should be sent to the Board.

2. Inspecting systematically billets and also camps or other places solely in military occupation as to water-supply, methods of disposal or removal of all solid and liquid refuse, general cleanliness, and for the prevention of exposure to infection.

3. Taking action by recommendations to the military authorities, by reports to the sanitary authority, or otherwise, with a view to the removal of any dangerous or objectionable conditions.

4. Giving information to the medical officer with the troops as to local cases of infectious disease as soon as they come to knowledge, and as to any localities, premises, bathing places, &c., which on health grounds should not be frequented by soldiers. In some districts troops will need to be cautioned against the consumption of sewage-polluted shell-fish. Two copies of the Board's weekly report as to infectious disease will be sent to each medical officer of health. One of the copies should be handed to the medical officer locally in charge of troops, in addition to the immediate notifications indicated above.

5. Ascertaining in association with the county medical officer of health what hospital provision is available for cases

[1] THE LANCET, Oct. 31st, 1914, p. 1053.

of infectious disease among troops in the district, and assisting in making arrangements for such provision. Existing civil resources should be made available to the greatest practicable extent for infectious cases among troops, care being taken not to diminish the accommodation for the civil population unduly.

The rest of this valuable reprint deals with the precautions to be taken by the sanitary executive in respect of the establishment of billets; the value which the services of the county medical officer will be to the military authorities by virtue of his consulting relations with district medical officers; and the machinery by which the recommendations of medical officers of health should be made to the military authorities.

The second reprint is a letter from the War Office enjoining upon general officers commanding in chief the necessity of coöperation in reference to the quartering and encampment of troops with the civil sanitary authority; and the third is an expansion of the same subject, whence the following may be quoted:—

1. As already pointed out in previous correspondence, it is necessary that there should be the closest coöperation between the civil and military sanitary officers in co-ordinating sanitary measures necessitated by the sudden influx of a large additional population.

2. In many cases it will not be possible to dissociate civil from military services, and, wherever it can be arranged, the sanitary services for the combined population should be carried out by the civil authorities. The adjustment of additional expenditure thus thrown on the local authorities will be carried out on the following lines.

3. The cost of additional scavenging in connexion with premises occupied by troops, whether hired premises or billets, may be refunded to local authorities, preferably at an arranged rate, based on the number of troops in occupation, rather than in the form of an account of expenses of actual collection, cost of appliances, disinfectants, &c.; cases of difficulty may be referred to the War Office for instructions.

4. The actual cost of special services specifically performed for the troops, such as the erection of latrines, extending water mains, &c., may also be refunded.

5. It is recognised that considerable additional expenditure of a recurrent nature may be incurred in connexion with various sanitary services, which, although not connected with the premises occupied by the troops, arise definitely out of military requirements—e.g., it may be necessary, in the interests of the health of the military as well as of the civil community, when large numbers are in billets: (*a*) to arrange more frequent clearances from all houses, whether occupied as billets or not; (*b*) to incur additional expenditure in connexion with professional services of medical officers, inspectors of nuisances, &c. Wherever practicable, such measures should be arranged beforehand between the military and civil authorities, and the additional cost may be refunded, provided general officers commanding are satisfied as to the reasonableness of the measures taken and of the amount claimed.

6. In the case of expenditure under 5 and 6, regard should be had to the fact of the continuous payments under paragraph 4. (Indeed, it may be possible in some cases to provide for such expenditure by inclusion in the arranged rate suggested in that paragraph.) In this connexion, however, Army funds should not be called upon to meet expenditure on special measures which are really necessitated by the inadequacy of *existing* sanitary conditions, and which may be aggravated, but not specifically created, by the increase in population; any case of dispute in this respect should be referred to the War Office.

7. For the present all claims on account of capital expenditure, other than those contemplated at paragraph 5, should be referred to the War Office with a full report of the circumstances and the recommendations of general officers commanding.

8. Arrangement should be made, as a rule, for local authorities to submit monthly claims of recurrent expenditure. Claims for capital expenditure should be rendered separately.

The letter closes by saying that only general lines are indicated, that economy must be preserved, and that everything said refers equally to detention camps.

The fourth reprint is a report from the Local Government Board with respect to inquiries in camps and localities occupied by troops up to Nov. 30th, the inquiries having been made by the inspectors of the Local Government Board. The examination of the various billets was obviously undertaken with considerable vigour.

The fifth reprint consists of extracts from the rules of billeting, which were issued with army orders last December.

The last five reprints are very brief, and the summary already given indicates their purport.

A valuable addendum to the circular letter consists of notes on the inspection of billets and camps by medical officers of health. On these we comment in a leading article upon the whole document.

ROYAL COLLEGE OF SURGEONS IN IRELAND AND THE WAR.

An emergency meeting of the Royal College of Surgeons in Ireland was held on March 31st to grant licences to students who had recently qualified. The licentiates having been admitted, the President, Mr. Conway Dwyer, referred to the services rendered by members of the College in the present war. One of the objects of the College, as set out in the original charter, was "to provide a sufficient number of properly educated surgeons as well for the service of the public in general as for that of our navy and army." At the present time over 600 Licentiates of the College held commissions in the Royal Army Medical Corps. No less than 28 of these had been mentioned in despatches in the present war; three had been made Companions of the Order of St. Michael and St. George; four had received the Distinguished Service Order; and one, Captain W. F. M. Loughnan, R.A.M.C., had been the first medical man to receive the Military Cross, "for gallantry on many occasions in Flanders in assisting to rescue the wounded whilst exposed to heavy fire." Captain Loughnan, who was present, being at home wounded, was heartily congratulated.

NOTES FROM THE GERMAN MEDICAL PAPERS.

The following notes have been sent to us by a correspondent in a neutral country who has been able to secure copies of German and Austrian medical journals:—

A sign of the times is the shifting of interest in the treatment of tetanus and other anaerobic infected wounds to the prophylaxis and treatment of typhus, including in the term both T. abdominalis (our typhoid fever) and T. exanthematicus (gaol and famine fever.) The usual expectant treatment of typhoid fever has sufficed to give excellent results in the military hospital at Strassburg, under Professor von Tabora, the death-rate being scarcely above 5 per cent., and comparing favourably with peace statistics. Not a single case of infection of the staff had been observed, a result attributed to the daily inspection of the 200 helpers, when all had to show their hands; this was before prophylactic inoculation was practised. The diet was limited to 5–7 cups of milk daily (each of 180–200 c.c.), with 4–5 cups of fairly thick gruel. Bath treatment was found impracticable with the available helpers, and had been entirely replaced by pyramidon internally; 7 tablespoons of a 1 per cent. solution in 24 hours (= 1·05 grm. daily), gradually reduced but not omitted until the fifth to seventh day of defervescence. Heart failure was avoided by giving digitalis early in all cases, six times

0·1 grm. of digipuratum, the tolerance being extraordinary, and the mortality from intoxication or heart failure less than 1 per cent.

Professor Goldscheider, a physician with the army, reports on the vaccine treatment of typhoid, having been induced to try it by the experience of a prophylactic dose which happened to fall in the prodromal period. The Marx vaccine was used in a dose of 250–750 million bacilli. Fifty-seven cases were so treated, and in 55 out of 70 injections a remission of fever followed on the first to third day, lasting an average of two days, and sometimes coinciding with the final defervescence. In the remaining cases there was an increase of fever, but not of a serious character. Otherwise no special effect on symptoms was observed, the local reaction being less than in the healthy subject. Nor was any influence of a previous prophylactic inoculation to be observed. Unfortunately in the more severe cases of disease only the smaller doses of vaccine could be employed. Dr. M. Rhein records a smaller series of cases at Strassburg using the Halle vaccine diluted 1 in 20, a dose of 0·6 to 1·4 c.c. into the ulnar vein. In 94 per cent. of patients a rise of temperature with rigor followed in from half an hour to 2½ hours with subsequent rapid defervescence. Nine cases out of 33 were completely successful with one injection, another case with two—in all a high eosinophilia (100–200 cells per c.mm.) being noted along with an absolute leucopenia.

From Professor Ziegler's hospital at Freiburg i.Br. comes an encouraging account of an attempt at auto-serum-therapy. 50 c.c. of blood were withdrawn, phenolised, and 2·5 to 4 c.c. of the serum injected daily sub cutem on the outer side of the thigh. In 14 out of 18 cases improvement was rapid, the temperature falling in 2–5 days, often with marked sweating, coma especially clearing after three or four injections, the patients expressing great relief. The cases so treated were nearly all severe ones, but were all able to be up within four weeks; twice a sudden drop of 2·5° C. was noted with small but not frequent pulse, amenable to camphor. This, as well as the therapeutic effect in general, is to be probably ascribed to bacteriolysis, an explanation given by Hammerschlag as early as 1893. Professor Matthes, of Marburg, is working with a trypsin solution of typhoid bacilli filtered clear as an immunising agent, which has already given encouraging results with guinea-pigs. Writers all assume that the merits of the prophylactic inoculation are still on trial, and that it will still be long before exact figures are available. Of immediate effects the percentage of serious harm is very low. Under Professor Penzoldt at Erlangen, out of 4000 injections in 1780 persons only 6·8 per cent. had fever above 38° C. and 0·2 per cent. above 39° C. In two cases, aged 28 and 33 years, thrombosis occurred once in the forearm, and once an embolic thrombus of the leg. In a third case, a few hours after the second prophylactic injection, the temperature rose to 39·6° C., followed by typical splenic enlargement, roseolar rash, and bronchitis and exitus 14 days later from intestinal hæmorrhage. Menzer had already recorded a case with diarrhœa and roseola, and Professor Penzoldt inclines to the assumption of an aggressin action of the dead bacilli on a concurrent living infection. At Strassburg Professor Schlesinger, out of 1340 injections, never saw any serious local reaction; after the three injections 5 per cent., 3 per cent., and 2 per cent. respectively were unfit for service on the following morning, the indisposition differing from influenza in that improvement was almost always noted within 24 hours. Urticaria was not very uncommon, and in 5 to 8 per cent. the spleen was enlarged. Professor Weichardt (Erlangen) finds that local reaction is slighter with the newer vaccines sterilised at a lower temperature, there being no appreciable risk in their employment, as 0·5 per cent. phenol kills any living bacilli in the vaccine within 24 hours. Smaller doses at longer intervals will probably immunise as fully as larger ones at shorter interval.

THE TEMPORARY EMPLOYMENT OF MEMBERS OF SCHOOL MEDICAL STAFFS IN MILITARY HOSPITALS.—The Board of Education has issued a circular to local education authorities alluding to the urgent need for more medical men in order fully to staff the additional hospitals required by the large forces now being placed in the field. In response to a question whether the Board would be prepared to facilitate the volunteering of officers of the School Medical Service for this hospital work the circular says that in cases where a school medical officer is also a medical officer of health, the Local Government Board must be consulted. So far, however, as the Board of Education is concerned, it assents freely. Should any school medical officer desire to volunteer the Board will raise no objection to his doing so even though his temporary absence may cause dislocation of the school medical service, assuming that local educational authorities will regard the matter in the same light and will give any medical officer, who desires to volunteer, leave of absence on such terms as will not involve any loss in his salary, status, or tenure. Arrangements can be made by which officers of the School Medical Service who join the Royal Army Medical Corps will be employed for home service only if they so desire, while they can offer themselves for service in military hospitals as civilians. In view of the pressing need for further medical assistance, facilities are being given to medical men who are serving as combatant officers in the Territorial Forces to transfer their services to the Royal Army Medical Corps of the Regular Army.

VACANCIES FOR MEDICAL OFFICERS.—We are asked to state that medical men are urgently wanted for the R.A.M.C. (T.) 2nd London Division for the Sanitary Service, in the Field Ambulances, and also as regimental medical officers. Candidates for the Sanitary Service should possess the D.P.H. or have had some special training in preventive medicine. Those joining the Sanitary Service especially are likely to have an early opportunity of serving abroad. Applications should be made in writing, or preferably in person, to the Officer Commanding, Depôt Medical Units, 2nd London Division, Duke of York's Headquarters, Chelsea, S.W., who will be pleased to see intending applicants any day between 9.30 A.M. and 5 P.M.—Three medical men are urgently required to complete the establishment of the 2/1st Highland Mounted Brigade Field Ambulance, R.A.M.C. (T.). Full particulars as regards pay, duties, &c., will be given by Captain A. Mowat, officer commanding, 2/1st H.M.B.F.A., R.A.M.C., Houghton Hill House, Houghton, Huntingdon.

RELIEF WORK IN SERBIA.—Sir Ralph Paget, who has been Assistant Under Secretary for Foreign Affairs since 1913, and has had an extensive experience in the diplomatic service since 1888, has been appointed British Commissioner for Red Cross relief work in Serbia, and will work under the joint committee of the Red Cross Society and the Order of St. John of Jerusalem. His wife, Lady Paget, who contracted typhus fever during her hospital work in Uskub, is happily now convalescent.—It has been announced that Dr. Ernest Magruder, of Washington, D.C., who, in company with other American medical men, went to render aid in Serbia, has succumbed to typhus fever there. Sister Augusta Minshull, of the Scottish Women's Hospital in Serbia, has also fallen a victim to the disease.

A meeting will be held in aid of the London Unit, Scottish Women's Hospitals for Serbia, on Monday, April 26th, at 8.30 P.M., at St. Marylebone Institute, 50, Paddington-street, W. Mr. Welby Fisher, of the Serbian Unit, British Red Cross, 1913, will give a lecture, illustrated by lantern slides, entitled "With the Serbians." Dr. Inglis will report on the work of the hospitals, prior to leaving for the front. Miss Cristitch, who has just returned from Serbia, will take the chair. Tickets of admission may be had on application to Mrs. F. W. Mott, 25, Nottingham-place, W.

NON-ALCOHOLIC BUFFETS FOR WORKERS.—In a letter to the *Times* Mr. Howard Marsh suggests (in view of the proposed self-denying ordinance, with or without prohibition) the establishment of non-alcoholic buffets for workers, such as have already justified themselves in numerous centres where soldiers are quartered. The services of the Y.M.C.A. have been of the highest value in this direction. "In one of their institutions," he says, "or in some other sufficiently large room (in other cases tents have been used), a buffet has been provided, staffed, most willingly, by volunteers attending in relays, in many instances from 6 A.M. to 10 P.M. Three or four business workers have ordered in, and taken charge of, the supplies, and someone, used to accounts, has collected the daily takings, paid them into the bank, kept the books, and prepared them for audit. A tariff sheet has been so

placed that it could be easily inspected. Sausage rolls, beef pies, ham sandwiches (of a size amply sufficient for "a snack at the bar") cost 2*d.*, a large cup of coffee and hot milk 1½*d.*, all other items—cake, plain bread and butter, and many others—1*d.* or less. A buffet worked on these lines, and when numbers are considerable, is quite a paying concern. As the items afford a good choice, are of good quality, and of moderate price, and well served, the buffet obviously meets a want and has been everywhere very popular. What has been done in a large number of cases for soldiers would be equally sound and beneficial in the case of men who are turning out war material and doing other heavy work." Mr. Howard Marsh further suggests the physiological importance of working the men in shifts.

THE EMPLOYMENT OF TRAINED NURSES IN MILITARY HOSPITALS.—The War Office has notified that nurses who have certificates of three years' training and are desirous of employment in military hospitals should apply, without delay, to the "Matron-in-Chief, Q.A.I.M.N.S.," War Office, for information as to conditions of service.

RUMOUR *v.* REALITY.—A lecture recently delivered at Lochinver, N.B., by Mr. W. S. Mackenzie calls forcible attention to the need for common sense and restraint in giving credence to the wild rumours that inevitably become current during periods of excitement. Stories had been put in circulation that the deaths at the military camp at Bedford had reached the enormous total of 300 and more during the month of January, largely due to an epidemic of measles. Mr. Mackenzie investigated the matter, and was able to state, from an official list in his possession, giving name, age, regiment, and cause of death, that from the first week of August up to March 6th there had been 78 deaths in all, of which measles, with all its complications, was responsible for 58. Mr. Mackenzie took a practical method of allaying the fears of his highland audience by offering to hand over the list to any responsible man selected by his auditors, and promising to pay £5 for the name of every member of the Highland Division who had died and whose name did not appear on the list.

GLASGOW MEDICAL GRADUATES AND THE WAR.—At the conferring of degrees at Glasgow University on April 1st Principal Sir Donald MacAlister said that he had already received the names of 384 graduates in medicine of the University who were on service with the forces of the Crown, and the list was by no means complete.

INSTRUCTION IN NURSING FOR BELGIAN LADIES.—It is announced that the Joint Anglo-Belgian Committee of the King Albert's Hospitals for Convalescent Belgian Soldiers have determined on the establishment in London, under the supervision of Professor Jacobs, of a training school where Belgian ladies may receive a course of training for nursing.

A DISTINGUISHED RECRUIT TO THE ROYAL ARMY MEDICAL CORPS.—The Earl of Crawford, who has done vigorous service in recruiting since the outbreak of the war, has now capped his patriotic service by himself enlisting as a private in the Royal Army Medical Corps. Lord Crawford, who was formerly a captain in the first volunteer battalion of the Manchester Regiment, as Lord Balcarres represented Chorley in the House of Commons from 1895 to 1913, and was Whip to the Conservative party. He studied social problems as a resident of the Oxford Settlement in the East End of London when the present Bishop of London was head of the institution.

MILITARY HOSPITAL AT ASCOT CLOSED.—As several cases of scarlet fever have broken out at the Military Hospital at Ascot the medical authorities at Aldershot have decided to close the hospital temporarily.

BLENHEIM PALACE AS A HOSPITAL.—The library of Blenheim Palace is being used, by the generosity of the Duke of Marlborough, as a hospital for wounded soldiers.

AT the annual meeting of the North Staffordshire Field Club, held in the new Central School of Science and Technology, Stoke, on March 23rd, Mr. W. Dunnett Spanton, F.R.C.S. Eng. and Edin., was elected president. The meeting marked the jubilee of the club, of which Mr. Spanton is an original member.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly examination in Practical Pharmacy held on April 9th, the following candidates were approved:—

Herbert Claude Apperly and Ralph William Codrington Ball, Middlesex Hospital; Mahmud Bayumi, Cairo and London Hospital; John Prichard Bracken, University College Hospital; Douglas Crellin, Cambridge University and St. Bartholomew's Hospital; Patrick Arthur Dargan, St. George's Hospital; Frederick Oloff Fehrsen, London Hospital; John Eskdale Fishburn, Portsmouth Municipal College; Arthur Alan Forty, Leeds University and Guy's Hospital; Leslie Stewart Goss, Oxford University and Middlesex Hospital; Bernard Heynes Greensill, Birmingham University; Rupert Bannatyne Hick, St. Mary's Hospital; George Gerald Jack and Vincent Coram James, Middlesex Hospital; David Joseph Heritage Jones, St. Mary's Hospital; James Phillips Jones, Guy's Hospital; Vladimir Kameneff, Moscow and University College Hospital; Nicholas Edward Kendall, Guy's Hospital; Maynard Lambert Loveless, Cambridge University and Middlesex Hospital; William Bird Loveless, Cambridge University and Middlesex Hospital; William George McKenzie, Bristol University; Thomas Walter Melhuish, Cambridge University and Middlesex Hospital; Sadek Girgis Moftah, Cairo and London Hospital; Edgar William Mottau, Ceylon Medical College and University College Hospital; Nava Ratnam Nalliah, Ceylon Medical College and London Hospital; Hallock Ratnarajah, Ceylon Medical College and St. Mary's Hospital; Arthur Lowry Robinson, University College Hospital; Malcolm Catchick Sarkies, Middlesex Hospital; Adolphe Gladstone Millott Severn, Guy's Hospital; Sydney Frank Simpson, King's College Hospital; John Greet Stevens, Guy's Hospital; Arthur Sunderland, Charing Cross Hospital; Godfrey Trehane Symons, King's College Hospital; Thomas Joseph Taunton, St. Bartholomew's Hospital; Robert Ockleston Townend, London Hospital; Arthur Reginald Stuart Warden, Cambridge University and St. Thomas's Hospital; Edward Scott White, Bristol University; and Israel Hyman Zortman, London Hospital.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The quarterly examinations of the above board, held in Edinburgh, were concluded on April 9th with the following results:—

FIRST EXAMINATION.

Janet Adeline Agnes Sang, William Bethune Stott, Rebecca Goodman, Muriel Keyes, Nathaniel Brownlee Watson, and Andrew Francis Brigimen.

Physics.—Max Gottschalk, John Kohler Steel, and Trevor Francis Thomas.

Biology.—Jung Bahadur Singh and Thomas Ferguson Minford.

Chemistry.—Gordon Spivey Woodhead, Alexander Forsyth Cuddell, John Lawson Gibson, Richmond Francis Kerr, and Thomas Ferguson Minford.

SECOND EXAMINATION.

Andrew Inglis Meek (with distinction), John Bruce Watson Telford, Mohammed Talaat, Patrick Joseph Murnane, Janie Isabel McBirnie, Agnes Emilie Keen, and Alan Herbert Brooke Hudson.

Anatomy.—Leslie MacDuff, Eduard Louis Adendorff, and Ernest Ebenezer Bronstorph.

Physiology.—Daniel Cornelius Howard, Hassan Amin Madwar, and Richard Gordon Bell.

THIRD EXAMINATION.

Zachariah Albert Green (with distinction), John Alexander Murray, John Alexander Tolmie, John Forbes Campbell, Frederick Charles Joseph Mitchell, Iwan Davies, Ernest Andrew Hamilton, Martha Hunter Hoshing, Phœbe Tripp, Frank Jones, and Paul Vertannes.

Pathology.—Indranarayan Borrah, William McElroy, and Stanley Wall Hoyland.

FINAL EXAMINATION.

Arthur Craig, William Leckie Coullis, Victor James Wilson, Bak Hin Ong, and Alamu Ojo Olaribigbe.

Surgery.—Charles Evelyn Meryon, John Murray Hiddleston, and Joseph Sydney Dickson.

Midwifery.—Nathaniel Benjamin Morris, Charles Evelyn Meryon, and John Murray Hiddleston.

Medical Jurisprudence.—Matthew McLintock Bainbridge, John Park Mathie, William Ainsley, Alexander Cray McKee, Douglas Charles Murray Page, Alexander William McGregor, William Alfred Backenstoe, Paul Lucien Manuel, Robert Christian Wilson Spence, William James Forsyth Craig, and Edward Spence.

UNIVERSITY OF GLASGOW.—The degrees of M.B. and Ch.B. were conferred on April 1st on the following:—

With commendation: Ronald Thomson Grant and Seymour Cochrane Shanks. Ordinary degrees: Ismail Abdurahman, George Kirkwood Allan, James Mair Anderson, William Ernest Boyd, M.A., Samuel Bryson, John Buchanan, John Munro Campbell, Alfred Mackenzie Clark, George Gibson Cooper, Henry Paterson Crow, Alexander Hogg Donaldson, Harry Taylor Findlay, George Fleming, George John Fraser, Ian Maclean Frazer, David Gould Gardiner, William Gordon, Thomas Cameron Houston, William Hunter Howat,

Robert Kyle, Hugh Brown Lawrie, Alfred Thomas Logan, Donald Kerr MacDougall, Donald M'Donald M'Intyre, James Murdoch Mackay, Joseph Allan MacLean, Thomas Duff Miller, Janey Lamond Munro, Prem Nath, L.D.S., Thomas Augustine O'Brien, John Roberts Pate, James Paterson, William Burns Primrose, Alexander Forbes Ross, William Jack Scade, William Ballantine Stewart, Robert Sutherland Strachan, Robert Taylor, Cecil Raymond Tytler Thompson, Margaret Walker, William James Cunningham Watt, James Gordon Wilson, and Thomas Young.

UNIVERSITY OF DURHAM, FACULTY OF MEDICINE.—At the Convocation on March 27th the following degrees were conferred:—

Doctor of Medicine.—Reginald Cyril Herbert Francis.
Doctor of Medicine for Practitioners of 15 Years' Standing.—Matthew Leslie Guy Hallwright and Arthur King, M.R.C.S.
Master of Surgery.—John Hamilton Barclay.
Bachelor of Medicine.—Patrick Alexander Clements, Geoffrey Bede Egerton, Mary Sarah Gordon, William Herbertson, Charles Henry Keay, Herbert Arnold Lake, George Edward Stephenson, William Stott, and Edgar James Tyrrell.
Bachelor of Surgery.—Patrick Alexander Clements, Geoffrey Bede Egerton, Mary Sarah Gordon, William Herbertson, Charles Henry Keay, George Edward Stephenson, William Stott, and Edgar James Tyrrell.
Diploma in Public Health.—Margaret Mair Miller.
Licence in Dental Surgery.—George Galloway Robertson.

In examinations for the Licence in Dental Surgery the following candidates have passed:—

Second Examination, Dental Mechanics and Dental Metallurgy.—Gainsford Reed and Wilfred Phillipson Spence.
Third Examination, Anatomy, Physiology and Histology; Dental Anatomy and Dental Histology and Dental Materia Medica.—Douglas Edward Sayce and Lawrence Somerville-Woodiwis.
Final Examination, Surgery, Dental Surgery, Dental Pathology and Bacteriology and Operative Dental Surgery.—George Galloway Robertson.

LONDON SCHOOL OF TROPICAL MEDICINE.—The following were the successful candidates at the examination held at the end of the forty-seventh session (January–April, 1915):—

G. Campbell* (with distinction), W. L. Peacock (Colonial Service), R. Bruce-Low (Colonial Service), E. Banos, W. J. J. Arnold (Colonial Service), and P. T. Patel.
* This candidate has been awarded the Duncan medal of the London School of Tropical Medicine, this being given to the student who obtains the highest aggregate of marks during the session.

UNIVERSITY OF LIVERPOOL.—The Diploma in Tropical Medicine has been obtained by the following gentlemen: J. F. Lobo, L.M.S., G. D. Madhok, L.R.C.P. & S., L.F.P.S., and K. V. Swami, L.R.C.P. & S., L.F.P.S.

DONATIONS AND BEQUESTS.—By will the late Miss E. M. Green, of Brighton, left £1000 to the Brompton Hospital for Consumption, and £500 each to the Brighton, Hove, and Preston Dispensary, and the Brighton, Hove, and Sussex Throat and Ear Hospital. The residue of her property the testatrix left equally between the Cancer Hospital, Fulham; the Royal Hospital for Incurables, Putney; and the British Home for Incurables, Streatham.—Mr. Thomas Critchley, of Blackburn, has given £1000 to the East Lancashire Royal Infirmary to endow a bed to be named after himself and his wife.—Under the will of the late Mr. Joseph Kitchingman, of Nook, Liscard, the testator left £2000 for the maintenance of two beds in the Victoria Central Hospital, Liscard; and £1000 to the Warrington Infirmary.

CENTENARIANS.—The death is announced of Mrs. Elizabeth Deacon, of Croydon, in her 103rd year. She retained all her faculties, and only quite recently wore spectacles.—Mr. Henry Preston, of York, has just celebrated his 100th birthday.

THE annual meeting of the Medical Missions Department of the Society for the Propagation of the Gospel in Foreign Parts is to be held in the Great Hall of the Church House at 8 P.M. on Wednesday, April 21st. The chair will be taken by Sir Francis H. Champneys, Bart., M.D., and the speakers will be Mrs. Ferguson-Davie, M.D. of Singapore, and Dr. H. H. Weir, of Corea.

Mr. F. M. Fisk, who has been manager of the London Branch of the firm of Parke, Davis and Co. since it was established in 1891, died on Saturday last. Mr. Harry Fisk, who has for some years occupied the post of assistant manager, has been appointed manager of the branch.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

AITCHISON, A., M.B., C.M. Glasg., has been appointed Assistant Medical Officer at the Winsley Sanatorium, near Bath.
DONELAN, J. O'C., L.R.C.P. & S. Irel., has been appointed Consulting Visitor in Lunacy for Dublin.
FENTON, D., M.B., Ch.B. Edin., D.P.H. Vict., has been appointed Medical Officer and Public Vaccinator for the Mellor District of the Blackburn Union.
HALL, W. T., M.B., C.M. Edin., has been appointed Medical Officer for the No. 9 District of the Newcastle Board of Guardians.
HOWELL, HOWELL TYLFORD, L.R.C.P. Lond., M.R.C.S., has been appointed Senior Resident Medical Officer at the Winsley Sanatorium, near Bath.
KIRKMAN, A. H. B., F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Staplehurst District of the county of Kent.
LANGRAN, WILLIAM, L.R.C.P. & S., L.M. Edin., L.A.H. Dub., has been appointed Medical Officer of Health to the Axminster (Devon) Urban District Council.
O'CARROLL, JOSEPH F., M.D., M.Ch. R.U.I., F.R.C.P. Irel., has been appointed a Medical Visitor in Lunacy.
PATTON, A., M.B., B.S. R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Saintfield District of the county of Down.
SMYTH, T. A., M.B., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Enniskillen District of the county of Fermanagh.
WHEELER, DORA E., M.B., Ch.B. Edin., has been appointed Anæsthetist to the Eye and Ear Infirmary, Liverpool.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £150 per annum, with residence, board, and laundry.
BATH, ROYAL UNITED HOSPITAL.—Resident Medical Officer.
BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Resident Medical Officer for six months. Salary at rate of £100 per annum, with board, residence, and washing.
BENENDEN, KENT, NATIONAL SANATORIUM.—Locum Tenens Medical Superintendent. Salary 5 guineas weekly, with board and laundry. Also Assistant Medical Officer. Salary £120 per annum, with board and laundry.
BETHLEM ROYAL HOSPITAL, London, S.E.—Temporary Assistant Medical Officer. Salary £300 per annum, with board, apartments, and laundry.
BETHNAL GREEN INFIRMARY, Cambridge-road, N.E.—Assistant Medical Officer. Salary at rate of £280 per annum, with apartments, board, and washing.
BIRKENHEAD BOROUGH HOSPITAL.—Female Senior and Junior House Surgeons. Salary £180 and £150 per annum respectively, with board and laundry.
BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, attendance, &c.
BIRMINGHAM AND MIDLAND EAR AND THROAT HOSPITAL, Edmund-street.—House Surgeon for six months. Salary at rate of £100 per annum, with board, lodging, and washing.
BOOTLE BOROUGH HOSPITAL.—Senior and Junior House Surgeons. Salary £150 and £130 per annum respectively, with residence, board, and laundry.
BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—Honorary Assistant Physician. Also House Surgeon for six months. Salary £100 per annum, with board, lodging, washing, &c.
BRADFORD POOR-LAW UNION, FOR ST. LUKE'S HOSPITAL AND UNION HOUSE.—Assistant Resident Medical Officer, unmarried. Salary £250 per annum, with rations, apartments, and washing.
BRIDGWATER HOSPITAL.—House Surgeon, unmarried. Salary at rate of £125 per annum, with board, lodging, and washing.
BRISTOL GENERAL HOSPITAL.—Second House Physician, House Surgeon, Casualty House Surgeon, and Resident Obstetric Officer, all for six months. Salary at rate of £150 per annum, with board, residence, &c.
BRISTOL ROYAL INFIRMARY.—Three House Surgeons. Two House Physicians, and One Obstetric and Ophthalmic House Surgeon. Salary at rate of £120 per annum, with board, apartments, and laundry.
BRISTOL UNIVERSITY.—Demonstrator in Anatomy. Salary £180 per annum.
BURNLEY UNION.—Resident Assistant Medical Officer. Salary £200 per annum, with apartments, rations, washing, and attendance.
BURY INFIRMARY.—Senior House Surgeon and Junior House Surgeon. Salary £175 and £150 per annum respectively, with board, residence, and washing.
BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and laundry.
BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician for six months. Salary £100 per annum, with apartments, board, and laundry.
CAMBERWELL, PARISH OF.—Temporary Assistant Medical Officer for Infirmary, Brunswick-square, Camberwell, Gordon-road Institution, Peckham, and Scattered Homes. Salary at rate of £500 per annum, with apartments, board, and washing.

CANTERBURY MENTAL HOSPITAL.—Assistant Medical Officer unmarried. Salary £250 per annum, with board, lodging, washing, and attendance.

CARLISLE NON-PROVIDENT DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with apartments (not board).

CARMARTHEN, JOINT COUNTIES ASYLUM.—Temporary Second Assistant Medical Officer. Salary at rate of £200 per annum, with board, lodging, washing, &c.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Tuberculosis Officer. Salary at rate of £400 per annum, with lunch and dinner. Also House Physician for six months. Salary at rate of £75 per annum, with board, residence, and washing.

COLCHESTER, ESSEX COUNTY HOSPITAL.—Resident Medical Officer. Salary £160 per annum, with board, washing, and residence.

DERBY COUNTY BOROUGH.—Temporary Tuberculosis Officer, unmarried. Salary £400 per annum, with board and residence.

DERBY, DERBYSHIRE HOSPITAL FOR SICK CHILDREN.—Female Resident Medical Officer for six months. Salary £200 per annum.

DURHAM COUNTY COUNCIL.—Assistant School Medical Officer. Salary £300 per annum.

EDMONTON MILITARY HOSPITAL.—Assistant Surgeons. Also Medical Man as Radiographer. Pay at army rates.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—House Physician for six months and House Surgeon for four months. Salary at rate of £75 per annum each, with board, residence, and washing.

GLAMORGAN COUNTY COUNCIL.—Medical Officer. Salary at rate of £300 per annum.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—House Physician for six months. Salary at rate of £60 per annum, with board, residence, and laundry.

HALIFAX COUNTY BOROUGH.—Temporary Assistant Medical Officer of Health. Salary at rate of £300 per annum.

HALIFAX ROYAL INFIRMARY.—Second and Third House Surgeons, unmarried. Salary £120 and £100 per annum respectively, with residence, board, and washing.

HARROGATE INFIRMARY.—Resident House Surgeon. Salary £100 per annum.

HOSPITAL FOR WOMEN, Soho-square, W.—Resident Medical Officer for six months. Salary at rate of £80 per annum.

HULL ROYAL INFIRMARY.—House Physician, unmarried. Salary £105 per annum, with board and apartments. Also Assistant House Surgeon. Salary at rate of £100 per annum, with board and lodging. Also Casualty House Surgeon for six months. Salary at rate of £80, with board and lodging.

HULL, VICTORIA CHILDREN'S HOSPITAL, Park-street.—Resident House Surgeon. Salary £100 per annum, with board and laundry.

INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

LANCASTER COUNTY ASYLUM.—Temporary Assistant Medical Officer Salary 6 guineas per week, with board, &c.

LIVERPOOL, BROWLOW HILL INSTITUTION.—Resident Assistant Medical Officer. Salary at rate of £300 per annum, with rations, &c.

LIVERPOOL, DAVID LEWIS NORTHERN HOSPITAL.—House Physician and House Surgeon for six months. Salary at rate of £100 per annum each, with board, residence, and laundry.

LIVERPOOL, WEST DERBY UNION, WALTON INSTITUTION, Rice-lane, Walton.—Temporary Assistant Resident Medical Officer, unmarried. Salary at rate of £300 per annum, with board, &c.

LONDON LOCK HOSPITAL, Harrow-road, W.—House Surgeon for six months. Salary at rate of £130 per annum, with rooms, board, and washing.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Medical Registrar. Salary at rate of 40 guineas per annum.

LONDON THROAT HOSPITAL, 204, Great Portland-street, W.—Registrar to assist at Out-patient Clinics.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Physician and House Surgeon. Salary at rate of £60 per annum. Also Assistant House Physician and Two Assistant House Surgeons. All for six months. Salary at rate of £40 per annum, all with board and washing.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, washing, and attendance.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four House Physicians, Four House Surgeons, Accident-room House Surgeon, House Surgeon to Aural and Ophthalmic Department, House Surgeon to Skin and Gynæcological Department, and House Surgeon to Out-patient Dressing Department.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female House Surgeon and House Physician. Also Resident Medical Officer at House of Recovery, New Barnet. Salary with this post £60 per annum.

NEWPORT MENTAL HOSPITAL, Caerleon, Mon.—Temporary Assistant Medical Officer. Salary 5 guineas per week, with board, rooms, and attendance.

NORFOLK EDUCATION COMMITTEE.—Temporary Assistant Medical Officer. Salary £300 per annum.

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon. Salary £120 per annum, with apartments, board, washing, attendance, &c.

NORWICH, JENNY LIND HOSPITAL FOR SICK CHILDREN.—Female Resident Medical Officer for six months. Salary £150 per annum, with board, apartments, and laundry.

OLDHAM COUNTY BOROUGH.—Assistant Schools Medical Officer. Salary £300 per annum.

PADDINGTON GREEN CHILDREN'S HOSPITAL.—Female House Physician for six months. Salary at rate of £80 per annum, with board, residence, and washing.

PORTPATRICK, PARISH OF.—Medical Officer and Public Vaccinator. Salary £60 per annum, and vaccination fees.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician and House Surgeon for six months. Salary £100 per annum, with board, residence, and washing.

ROTHERHAM HOSPITAL AND DISPENSARY.—Senior House Surgeon. Salary £200 per annum, with board, lodging, and washing.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Senior Resident Medical Officer. Salary £200 per annum, with board, residence, and washing. Also Assistant Anæsthetist (part-time). Salary £50. Also Female Senior and Junior Obstetric Assistants. Salary £75 and £50 per annum respectively. Each with board, residence, &c. Also Female Junior Anæsthetist (two days weekly) and Two Female Resident Medical Officers. With board, residence, &c.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Out-patient Surgical Officer for six months. Salary at rate of £50 per annum.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £100 and £75 per annum, respectively, with apartments, board, lodging, and washing.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Senior and Junior House Surgeons. Salary £100 and £80 per annum respectively, with board, residence, &c.

SHEFFIELD, ECCLESALL BIERLOW UNION.—Resident Assistant Medical Officer. Salary £250 per annum, with board, washing, and apartments.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Surgeon and Assistant House Physician.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Assistant House Physician. Salary £100 per annum, with board and residence.

SHREWSBURY, ROYAL SALOP INFIRMARY.—House Physician. Salary at rate of £110 per annum, with board and apartments.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Senior House Surgeon. Salary £150 per annum, with residence, board, and washing.

STAFFORD COUNTY MENTAL HOSPITAL.—Female Temporary Assistant Medical Officer. Salary £250 per annum, with board, apartments, and laundry.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—Resident Surgical Officer, unmarried. Salary £300 per annum. Also Two House Surgeons and One House Physician, unmarried. Salary in each case £150 per annum, all with board, residence, and laundry.

SWINDON BOROUGH EDUCATION DEPARTMENT.—School Medical Officer. Salary £300 per annum.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Senior House Surgeon.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer, unmarried. Salary £150 per annum, with board, lodging, &c.

WAKEFIELD, CLAYTON HOSPITAL.—Female Junior House Surgeon. Salary £120 per annum, all found.

WARRINGTON, LORD DERBY WAR HOSPITAL.—Resident Physician and Surgeon.

WARRINGTON INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary at rate of £120 per annum, with board, apartments, and laundry.

WESTERN OPHTHALMIC HOSPITAL, Marylebone-road, W.—House Surgeon. Salary £100 per annum.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—House Physicians. Salary £120 and £100 per annum, with board, residence, and washing.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY.—House Surgeon. Salary £150 per annum, with board, lodging, and attendance.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Board, lodging, and attendance provided.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Abergele, in the county of Denbigh; and at Ashton-in-Makerfield, in the county of Lancaster.

Births, Marriages, and Deaths.

BIRTHS.

BURNEY.—On April 4th, at Lancaster-place, South Hampstead, London, the wife of Captain W. H. Skardon Burney, R.A.M.C, Indian Expeditionary Force, of a daughter.

DISMORR.—On April 4th, at Milton House, Gravesend, the wife of Cecil James Stewart Dismorr, M.R.C.S., L.R.C.P., of a son.

LITTLE.—On April 9th, at Wimpole-street, W., the wife of Ernest G. G. Little, M.D., F.R.C.P. Lond., of a son.

MARRIAGES.

HARDWICKE—DUFF.—On April 7th, at the Church of St. Anselm's, Mayfair, W., Edwin Cecil, Lieutenant, R.A.M.C., to Joan Ross, second daughter of the late Hugh Alexander Duff, of Kereru, New Zealand, and Edderton, Ross-shire.

HEWLETT—COLLINS.—On April 10th, at St. Swithin's Church, East Grinstead, by the Rev. Percy Collins, M.A., Richard Tanner Hewlett, M.D., F.R.C.P., Professor of Bacteriology in the University of London, to Gertrude Lilian Floyd, daughter of Dr. and Mrs. C. E. Collins, of "Redstede," East Grinstead.

DEATHS.

ADAMS.—On April 9th, at Friarsfield, Lanark, Surgeon-Lieutenant-Colonel Alexander Maxwell Adams, F.R.C.S. Edin., 3rd Scottish Rifles, aged 78 years.

EDWARDS.—On April 11th, at Springfield House, Queen-street, Cardiff, William Thomas Edwards, M.D., F.R.C.S., LL.D., J.P., aged 93 years.

GRANT.—Missing from s.s. *Falaba*, torpedoed on March 28th in the Bristol Channel, Dr. Alexander William Harvey Grant, West African Medical Staff, aged 42 years.

HARRISON.—On April 12th, at Bankfield, Haslingden, the residence of his mother, William Sandilands Harrison, Lieutenant-Colonel, Royal Army Medical Corps, age 43 years. Interment Thursday, April 15th, at 12 noon, Haslingden Parish Church. Will friends kindly accept this—the only intimation.

MAGRUDER.—On April 8th, at Belgrade, Serbia, from typhus fever, Dr. Ernest Pendleton Magruder, A.M., M.D., F.A.C.S., of Washington, D.C., Director, American Red Cross Unit 3, aged 43 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE TRAINING OF INDIAN MIDWIVES.

A SCHEME devised by Lady Willingdon has been recently put forward at Bombay. It is proposed to create an interest in the work done by the Bombay Sanitary Association towards reducing the infant mortality and the dangers to mothers, due to the ignorance and superstition of the native midwife and the women who employ her. It is quite apart from training nurses for India or training Indian women as nurses. In India there is a class which cannot be reached by providing trained nurses unless they are taught to appreciate them and can afford to employ them. The aim is to put the native *dai*, or midwife, under trained supervision. It will be impossible to supersede these women at once, but a good deal can be done, by bringing them under control and by legislating on the lines of the Midwives Act, England, 1902, gradually to replace them. The position of these native *dais* must, however, be taken into consideration. In some cases they are hereditary holders of the title. They cannot take the place of the trained nurse, but they might with advantage be got into touch with health visitors until the demand is created for a better trained class of nurse, resulting in a reduction in the infant mortality and risk to the mother. In Bombay there are ten municipal district nurses and five health visitors, who attend poor women in confinement and give instruction in personal and domestic hygiene; they are empowered to give aid in the shape of a bed, blanket, milk, &c., and disinfectants to women who are certified by a magistrate to be in a deserving condition. There are ten municipal dispensaries, and at each of them these native women have been collected and a course of demonstrations and instructions given to them in their own language. It is now sought to provide ten more trained women, and shortly to have a maternity home where poor women may go for confinement and where native *dais* will be trained. The idea is to get to know these women and their methods and induce them to call in skilled aid and ask for the help of a municipal trained nurse free of charge, and to notify all births and deaths to the Health Department, and all cases of sickness among women.

It must be understood that this movement is an educative one directed, first, at removing some of the risks by controlling the *dais*; and secondly, by providing more lady health visitors to induce mothers to ask for more skilled attendance by visiting the homes and explaining the advantages.

INSTRUCTION IN PRACTICAL BEE-KEEPING.

To the Editor of THE LANCET.

SIR,—I have received a letter from the British Bee-Keepers' Association informing me that courses of instruction and demonstrations in practical bee-keeping will be given throughout the spring and summer months at the Educational and Experimental Apiary of the British Bee-keepers' Association in the Zoological Gardens, Regent's Park, and that full particulars can be obtained from Mr. W. Herrod-Hempsall, the secretary, 23, Bedford-street, Strand, W.C. The association makes no profit whatever on these lectures and demonstrations; in fact, it was only by the financial assistance received from the Development Commissioners that the apiary was established in the Zoological Gardens. I would remind your readers that the bee-keeping industry enables an additional and very substantial profit to be obtained from the land, and that the production of fruit almost entirely depends upon the visits of honey bees for the fertilisation of fruit blossoms.

I am, Sir, yours faithfully,
April 12th, 1915. J. BERNARD LAMB.

THE ARMCHAIR EXPERT.

IN the current issue of the *Craigleith Hospital Chronicle*, "our own military expert, a gentleman as intimately in touch with the Headquarters' Staff as any other expert who fills an armchair," contributes some Notes on the Military Situation which an imaginary Censor believes to be "as instructive as any similar notes I have ever had the pleasure of censoring. Please send me some more of the same." The notes, from which we extract the following, are excellent nonsense:—

A correspondent asks me the pertinent question: "Since the Kaiser has given 85 whole holidays and held 69 commemoration services to celebrate the total annihilation of his enemies, how is it that the war still continues?" The point raised is interesting, and the answer undoubtedly must be that the holidays were given first and the annihilations arranged afterwards. The weather then presumably intervened, and so the latter part of the programme had to be postponed. [*Note by Censor*—"Passed, but how did you learn all this?"] Another correspondent inquires why copper is so important for our enemies, since he always understood that iron was the metal employed in the manufacture of armaments. The answer to this unquestionably is that the iron is at present required to make crosses, and as the value of each of these is about a copper that metal is naturally in considerable demand. [*Note of Censor*—"Passed, but please stop now."]

The notes bear the signature of Mr. J. Storer Clouston, who has to his credit, in "The Lunatic at Large," one of the drollest works of recent times.

LEAVING THE COFFIN IN THE PORCH.

To the Editor of THE LANCET.

SIR,—Will you allow me to suggest a "funeral reform"? Invariably, under all circumstances, the coffin should be placed in the porch and never taken *inside* the church, whether the deceased has died from infectious illness or not. The coffin should be in the care of the undertaker in the porch until the mourners come out of church after the first part of the funeral service. One can hardly imagine how such a senseless custom as the present one could have ever come into vogue. But whatever be its origin, it is most unwise from a sanitary point of view under any circumstances or at any time of the year. The precaution is especially necessary now that spotted fever has appeared in several places.

I am, Sir, yours faithfully,
April 10th, 1915. ÆSCULAPIUS.

MISSED ABORTION.

A MEDICAL correspondent, signing himself "Carnis," sends us the following upon which he invites comments: An exceptionally strong and healthy married woman, 26 years old, with one child 4 years of age, had her last regular menstruation at the end of January. At the end of the following May a red and brown discharge set in per vaginam, occurring on alternate days and lasting for six weeks, when it ceased, amenorrhœa following. At the end of March in the succeeding year she felt abdominal pains, accompanied by a watery discharge per vaginam, which lasted for three days, when a carneous mole, measuring 4 inches in length and 3½ inches in circumference, was expelled. On cutting open the mole no trace of a fœtus or cord could be seen, but a number of nodules of various sizes projected from the anterior wall of the cavity. The lining and surface of the mole were smooth. Very little hæmorrhage accompanied the expulsion.

A GOOD DINNER FOR THREEPENCE.

THE Central Committee on Women's Employment is doing sensible work in demonstrating through its training kitchens that the price of good living is a matter of sound domestic economy and competent culinary art. Where many people are to be fed, the cost of a good dinner is being reduced as low as 3*d*. a head. This dinner consists of either boiled fish, with parsley sauce, potatoes, and baked syrup rolypoly pudding; or roast mutton, greens and potatoes, with stewed apples and custard. Upwards of 1500 dinners are being supplied weekly from six centres to the women who work in the Queen's Work for Women Fund Workrooms. In many households nearly as much food is wasted as is eaten. But, apart from wilful waste, the waste arising from uneconomic methods and abominable cookery is as detrimental if less criminal.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 14th, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 8	29·454	W.	0·03	101	56	41	43	46	Cloudy
,, 9	29·870	N.W.	0·10	99	54	41	41	45	Cloudy
,, 10	30·016	N.	...	99	54	40	41	44	Cloudy
,, 11	30·240	W.	...	75	56	44	46	48	Overcast
,, 12	30·280	S.W.	0·25	56	49	44	43	47	Overcast
,, 13	30·090	N.	...	57	47	42	41	43	Cloudy
,, 14	30·104	N.	...	37	54	37	37	39	Fine

The following magazines, journals, &c., have been received:—Maryland Medical Journal, Modern Hospital, Surgery, Gynecology, and Obstetrics, Journal of Anatomy and Physiology, Science Progress, Journal of Comparative Pathology and Therapeutics, Annales de l'Institut Pasteur, American Journal of Medical Sciences, Archives of the Roentgen Ray, &c.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Lord Rayleigh, O.M.: Deep Water Waves, Progressive or Stationary, to the Third Order of Approximation.—Hon. R. J. Strutt: A Chemically Active Modification of Nitrogen, produced by the Electric Discharge. VI.—Dr. C. Chree: The Difference between the Magnetic Diurnal Variations on Ordinary and Quiet Days at Kew Observatory.—Mr. F. Horton: The Effects of Different Gases on the Electron Emission from Glowing Solids (communicated by Sir J. J. Thomson).—Mr. W. S. Tucker: Heats of Dilution of Concentrated Solutions (communicated by Prof. H. L. Callendar).—Mr. T. R. Merton: On the Origin of the "4686" Series (communicated by Prof. A. Fowler).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY.

SECTION OF THERAPEUTICS AND PHARMACOLOGY (Hon. Secretaries—W. Langdon Brown, Philip Hamill, J. Gordon Sharp): at 4.30 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1915-1916.

Discussion:

On the Treatment of Phthisis by the Induction of Pneumothorax, to be opened by Dr. T. D. Lister, who will give a demonstration of the apparatus.

Dr. Jane Walker, Dr. S. Vere Pearson, Dr. Lillingston, Dr. de Carle Woodcock will take part in the discussion.

GENERAL MEETING OF FELLOWS: at 5 P.M.

Ballot for the Election of Candidates to the Fellowship.

FRIDAY.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE (Hon. Secretaries—G. S. Buchanan, William Butler): at 8.30 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1915-1916.

Dr. H. E. Corbin: Small-pox among Cotton Operatives.
Dr. E. L. Collis: The Occurrence of an Unusual Cough among Weavers of Cotton Cloth.

(Members desiring advance proofs should communicate with Dr. G. S. Buchanan, Local Government Board, Whitehall, S.W.)

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Papers:—Dr. N. S. Finzi: Late Radium and X Ray Burns.—Mr. F. H. Glew: A New Alpha Ray Effect.—Mr. A. O. Forder will exhibit a New Plate Holder.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

TUESDAY.—8.30 P.M., Exhibition of Specimens. Mr. J. H. C. Sproule: Medico-Legal Experiences in Ceylon.—Dr. R. Burrows: The British Medical Association Report on Crime and Punishment.

SOCIETY FOR THE PROPAGATION OF THE GOSPEL IN FOREIGN PARTS (MEDICAL MISSIONS DEPARTMENT), Great Hall of the Church House.

WEDNESDAY.—8 P.M., Annual Meeting. Speakers:—Mrs. Ferguson-Davie, M.D. (Singapore) and Dr. H. H. Weir (Corea).

HARVEIAN SOCIETY OF LONDON, Stafford Rooms, Titchborne-street, Edgware-road, W.

THURSDAY.—8.30 P.M., Discussion on Epidemic Cerebro-spinal Meningitis (opened by Dr. F. E. Batten). Followed by Dr. D. N. Nabarro, Dr. J. A. Arkwright, and Dr. L. Colebrook.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Museum Demonstrations for Advanced Students and Medical Practitioners:—

MONDAY.—Mr. Shattock: Specimens of Spina Bifida.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY.—3 P.M., Mr. B. Fletcher: The War on the Rheims. (Lecture II.)

THURSDAY.—3 P.M., Prof. A. S. Eddington: The System of the Stars: The Stellar System in Motion. (Lecture II.)

FRIDAY.—9 P.M., Major P. S. Lelean, R.A.M.C.: Military Hygiene at the War.

SATURDAY.—3 P.M., Lieutenant-Colonel A. G. Hadcock: Modern Artillery. (Lecture II.)

For further particulars of the above Lectures, &c., see Advertisement Pages.

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